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THE TEACHING OF THERAPEUTICS*

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To heal has ever been the function of the physician. Therapeutics is so much older than pathology that it is but natural that the latter should have had difficulty in having its tenets promptly and fully recognized in the treatment of disease. Empirical principles die hard, for they have developed by that long trial and struggle —that "survival of the fittest"—that speaks for permanency. The relief of pain by heat was ages old before the seat of pain was located in the nervous system. To the man with the pain the attendant with the hot stone has always been preferable and always will be to the man who is content with a knowledge of the cause of pain, its probable duration and its significance from a pathologic point of view. It is but natural that the man with the knowledge should show contempt for the man with the hot stone, and more natural still that the sufferer should sympathize with the one who brings speediest relief. Thus, with the growth of medical science, therapeutics has suffered from neglect on the one hand and overemphasis on the other. The development of schools of medicine with their various methods of treatment has been a blight on medical growth, both scientifically and sociologically. The last twenty years has done much to give us a practical and in some instances a specific therapeusis for many conditions, and it is clear that the day of schools is passing. Even those schools of therapeutics that are practically a religion to their adherents are showing signs of disintegration. The sin of nihilism toward drugs in the name of science delayed but will not prevent the early coming of the day of rational therapeutics based on sound investigation, careful observation, critical selection and general principles broad enough to incorporate the essential and the useful of all forms of healing.

The present teaching of therapeutics is in an unsatisfactory condition. The dead hand of the past has nowhere else in medicine thrown its heavy shadow so far across the path of progress and growth. The old prejudices are among us, both within and without the medical profession. We must free our minds from passion, bias, the spirit of controversy and seek for the truth and seek to teach it. We must welcome and adopt all that is worth while in the various schools and make it a part of medical science. It is possible now to extract the kernel of truth from most systems of healing. We must do so or we delay the hour when medicine is to take fully her noble place in the everyday life of all living men and women.

The prime essentials of all therapeusis are two: first, knowledge of the conditions treated and their usual course; and, second, a sympathetic desire to give relief and a knowledge of how to do so. The physicians—and there are many of them—whose minds stop working when a diagnosis is made are the best friends of the cult and the quack. The only way to teach therapeutics is to practice it under the eye of the student. Can anything be more deadening and disheartening to the student than to take notes from the enumeration in a prosaic lecture of the various drugs "good for certain complaints," with their various doses? The absurdity of such teaching is now becoming generally recognized. In some institutions the historical element, which is such a strong factor in hampering our medical schools, still separates medicine and surgery from therapeutics. They must all go together and grow together. With increasing scientific thoroughness, treatment will forge again to the front in the art of the physician.

Pharmacology has gained a firm hold in medical instruction. It must not fail to extend its domain to the bedside, to become a part of the life of each and every teaching clinic. It must be taught so that dog experiments will be seen from the viewpoint of man rather than that drug effects on man shall be looked at primarily from the standpoint of the dog. Just as the clinical observer is again beginning to have his day in scientific medicine, so the value of bedside pharmacology is being increasingly recognized. Practically, it may be said that the modern teaching of therapeutics should concern itself with a choice from that great hodge-podge, known as the Materia Medica, of the useful and the usable; with a study of practical pharmacology, based on physiology; with bedside instruction in pharmacology and therapeutics as a distinct part of medicine and surgery; and with the adoption and adaptation of all that is worth while in the various systems of medicine. The physiologic effects of hyperemia are much alike whether induced by a diffusible stimulant, a mustard pack, a hot bath or general massage. We should teach the student the significance of the hyperemia and show him the various methods by which it may be induced. He should understand that the osteopath, the masseur, the hydrotherapeutist, all may obtain therapeutic results even if their knowledge is crude, their logic poor, their theory unscientific. They may lack that first prime requisite, knowledge of disease process and power of diagnosis, but they make up for it in the minds of the ill by their assiduity in that second essential, the sympathetic desire to be helpful and the willingness to work for results. We must cultivate this latter in our coldly analytical laboratory

* Chairman's address before the Section on Pharmacology and Therapeutics of the American Medical Association, at the Sixty-Fourth Annual Session, held at Minneapolis, June, 1913.

students, when they reach the clinic; or, as physicians, they will find that their superior knowledge is not a sufficient magnet to draw patients to them from the hands of the drugless healer and the faddist.

Drugless healing is a reproach to medicine. It should never have come into being as an entity. We should not be so associated with bottles and evil doses that the prescription is recognized generally as the badge of our profession. The teacher of therapeutics should be the teacher of medicine and of surgery, and as such he should demonstrate to the student something of the scope of the possibilities in the relief of the sick. Bier's hyperemia, the use of oiled silk in dressings, the after-care of a patient who has been operated on; the intelligent use of the ice-bag should be taught by the surgeon just as the use of the mustard-plaster, the cold sponge-bath, the administration of digitalis and of calomel should come from the teacher of medicine.

When physical therapeutics is taught by clinicians from the sound basis of physiology and pathology in all of our medical schools, the problem of drugless healing as it is practiced outside of the profession will no longer exist. The teacher must remember that a cannon-ball rolled over the outside of the abdomen is more satisfactory to many constipated patients than a cathartic pill inside, and that a dietary cure is even more gratefully received. Skill in the use of drugs and other forms of treatment can only come from careful observation. One physician succeeds where another fails, and often with the same remedy or the same method. We all know the splendid effects of calomel on the patient who announces that he cannot take it, because Dr. S. has tried it either without success or with subsequent evil results. A few good drugs, well understood, are of more value than a whole medicine-chest. The man who has been taught the intelligent use of such remedies as opium, quinin, castor oil, calomel, the salicylates and digitalis need not fear as a competitor the drug-clerk who later studies medicine and who has everything on the shelves at his fingers' ends.

Day-to-day instruction in the use of drugs and in their careful selection is required of the clinical teacher. A few minutes in each bedside or outpatient clinical conference will bring out the main points. This is vital, since the majority of the text-books on therapeutics are merely well-arranged cemeteries filled with records of treatments that have gone before. They attempt to list most of the drugs that have been used for any given condition and are apparently satisfied with the mention of any form of treatment if they can put the responsibility on some one else. Selection is just beginning to be recognized as the main function of the author of such a text-book. If he cannot intelligently choose the wheat from the chaff, how is the young physician who looks to the book for guidance to be able to do so? The student should be taught to determine the leading symptoms demanding treatment and to care for them promptly, provided they are not needed as guides in diagnosis. Along with this should go a thorough instruction in the effects of each drug given and in its possible action on various bodily functions and the method of the correction of these, if necessary. Physicians and laity alike are too prone to consider subsequent disease symptoms as due to drugs previously administered. Pharmacologic bedside studies alone will give the proper judgment in the interpretation of such conditions.

We must also recognize that elegance in pharmacy has its place in therapeutics. The modern stomach cannot be ignored. The psychic element in gastric function holds for drugs as it does for foods. And we must not lose sight of mental therapeutics. Milk-sugar mixed with hope and encouragement is sweeter than saccharin to many a sufferer. Reassurance is often as comforting as opium and has fewer after-effects.

My plea, then, is for a broader and for a narrower point of view in the teaching of therapeutics; a broader one to include all that is essentially sound or that can be scientifically tested regardless of origin or school, and a narrower one to exclude all that is outgrown, that savors of polypharmacy and that smacks of the quack. It is further for pharmacologic instruction of the student with the dispensary patient before him, or at the bedside and for a firm union of the teaching of therapeutics with all forms of clinical instruction.

Sacramento and Webster Streets.

THE FUTURE OF THE MEDICAL MAN*

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Gentlemen of the Graduating Class:

Need I tell you how I appreciate the honor that has been conferred on me by your dean and the medical faculty of Rush Medical College by asking me to address you this afternoon at this, the culminating moment of your university career? But let me confess to you that with the honor comes the sense of heavy responsibility. From him to whom much is given much is also asked. Time and again in the years that are to come, this graduation ceremony will recall itself to the minds of each one of you as marking an epoch. It would be well could I utter words which should impress themselves in such a way that they remain with you as part and parcel of the event, words memorable for themselves as well as of the occasion; but if the utterance of such words is given to few, very few, of us, it is proper that what I say should be not unworthy, that it should attune itself to the occasion. It would be out of harmony with the event were I to seize this opportunity to deliver my message as a pathologist, and enunciate my views concerning some moot point in medical science; were I to read you a lecture on advanced pathology.

I must perforce strive to utter thus that which will appeal to each of you, that which will be helpful. During the last few years you have been satiated with lectures on special topics; to-day it is for me to strive to sum up the significance of all this teaching—all this education—in one comprehensive address. For four years—aye, and for long years previously—you have been preparing to enter the practice of medicine; to-day you are at the very entrance of that practice, at the threshold; to-day the university gives you its testamur. Each one of you must be asking, "What of the future?" Now, I am far from wishing to inflict a sermon on you, but at this particular moment I do but reecho the thought that is uppermost in all your minds. All the work of all these years has led to this moment, and now what next? What about the years that are to come?

* Commencement address at Rush Medical College, Chicago, June 12, 1913.

NATURE OF TRUE KNOWLEDGE

Well, gentlemen, I trust that I shall not shock you too much when I lay down that you know next to nothing; you are but at the beginning of knowledge. I say this knowing perfectly well that there is no period in the whole of a man's existence when he feels so replete, so distended, with medicine as immediately following on the final examination and graduation. I speak knowingly, for I have been there myself. But, gentlemen, this sensation is comparable to that of the woman who, suffering from flatus, imagines herself to be in the latter months of pregnancy. It is an equally false conception. In the first place, in a four-year course, however well conducted, your teachers can have given you but the basal outlines of their respective subjects. We know how small a portion of one subject we can instil into you in the brief months during which you sit under each one of us. That is the reason why we are constantly striving to lengthen our courses—why each year you are made to feel more and more the heavy burden of the training. The better the teacher, the more, I think, his conscience pricks him for the inevitable deficiencies of his curriculum; and, paradoxically, I may add, the simpler and more elementary he makes his teaching, realizing that, as his subject cannot possibly be covered, his time is best employed in laying down secure foundations on which later the student may build a fair and seemly superstructure.

In the second place, true knowledge consists not in cognition, in the possession of a store of facts, but in the capacity to utilize them. You may be chock full of medical data, but until you have learned to employ these data, until you have tested their value in practice, you are but, as it were, sucklings in medicine. Heaven preserve the patients of the man who passes straight from graduation into private practice! Great as is the *vis medicatrix naturae*, that imposes all too heavy a strain on it. This only would I say, that the vast increase in the practical work of the course that has been brought about during the last generation should make the student more secure of his data, more capable of using them with advantage; but notwithstanding the increased contact with the actual patient during the last two years of the course, which in comparison with your predecessors you have been afforded, I still doubt whether to-day the student on graduation is as capable of launching out into the world, is as serviceable to his patient, as was the product of the days of apprenticeship forty years ago. When it comes to a matter of differential diagnosis, he may be vastly his superior; but in knowledge of treatment of the patient as distinct from his disease, he is as vastly inferior. Wherefore, I trust that one and all of you before me have dedicated yourselves to at least a year of hospital internship, that you may learn the art as distinguished from the science of medicine.

That learned old physician, John Caius, physician in succession to Edward VI, Mary and Elizabeth (at whom, indeed, Shakespeare seems to have poked fun), when he refounded the college which bears his name in Cambridge, with that love of symbolism not uncommon in his generation, built three gates. The gate of entrance with its little wicket (now significantly removed as a relic into a back garden) he called the Gate of Humility. In the midspace of the college, supported on either side by the students' rooms and college buildings proper (which on their foundation stone were dedicated to Knowledge) was and still is a wide and lofty archway, of almost Roman simplicity and severity, with the inscription "Virtutis"—the Gate of Virtue (and of Wisdom). At the farther end, leading out to the public schools, where the university confers its degrees, is the exquisite and richly ornamented Gate of Honor, about the earliest example of Italian Renaissance architecture to be found in England. All of which is a parable. I for long wondered why Caius when he made this gate so beautiful made it so diminutive. On first thought, one would expect something of goodly size, suggesting a triumphal arch. But no, the passage through it is narrower and lower than that through the old gate of entrance; the Gate "Virtutis" would as it were swallow several of it. Did he not here intend another parable—that the man who completes his course with honor should pass out, out of the college into the wider world, even as he entered college, with becoming and even greater humility?

You are thus at the beginning of medical learning, not at its end; but if true medical knowledge and wisdom come with practice—if you as medical men are to be students all through the days of your active life—how are you to comport yourselves toward your profession?

MEDICINE AS A BUSINESS

Here on the borders of the West, I feel some delicacy in entering on this subject; but at the same time, for the love of my profession, I recognize the necessity that I should speak frankly and urgently. For what in the East we call "the Western spirit" has entered into medicine. I protest against this appellation: this spirit is neither Eastern nor Western; it affects the whole continent; it affects the modern world in general; it is the spirit of the age. We live in an age when a man's status is determined by his apparent wealth. That is inevitable with progressive democratization. Worth may make the man and the want of it the fellow. The more philosophic we are, the more freely we admit with the poet that all else is "leather and prunella"; but notwithstanding and nevertheless, save in the most outstanding cases, worth carries with it no social recognition—it is imponderable. Man—and woman—demands some standard of comparison, and if relative rank be largely abolished, there is nothing to fall back on but worldly possessions, whence it is that, whereas of old the physician, and his wife, had a status dependent on his profession—whereas he ranked next to the lawyer, and as a professional man took precedence of those engaged in commerce—to-day he who has scooped his millions from the manufacture of a quack remedy is accounted the greater, and takes without shame the upper seat; and almost perforce the physician is driven to strive after more than a mere modest competence, if he is to be of standing in the community.

Therefore the student entering medicine to-day is apt to have before him something not included in the hippocratic oath. Certain it is that an increasing proportion of medical men is more concerned over the means of improving its balance in the bank than over the means of improving the health of its patients, and regards social success as more to be considered than professional capacity. What is more, other influences are leading in the same direction. It is to the credit of the young manhood of this country and this generation that it realizes as never before its duty to make its own way in the world. To me there is something splendid in this impatience of the yoke of indebtedness, in the determination to repay at the earliest moment, whether to parent or family friend, the heavy cost of the medical course. Often, it is true, I am torn between admiration and regret. I see men who, I am convinced, would

become leaders in the profession could they devote a year or two to advanced medicine and research, men who would thereby reap some fifty, some one hundredfold in the years that are to come, shortsightedly, as it seems to me, let slip the opportunity and consign themselves to mediocrity in their keen anxiety to be out of debt and independent. I think that in such cases my admiration predominates, but my regret is also poignant; but such men inevitably begin practice with the need to make a pecuniary success almost too prominently and constantly before them.

Then, again, it is but human to hold that there be a certain ratio between the amount of capital invested in any enterprise and the return yielded thereby. We may regard the time and money expended on his education by or on behalf of the medical student as the equivalent of capital invested. Within a generation—within little more than half a generation—this requisite capital has increased to an extraordinary extent. This fact was brought rudely before me within the last few days, when discussing with my old friend, the dean of the medical faculty of the University of Minnesota, Professor Wesbrook, the developments that have occurred in the seventeen years during which he has been connected with that school. In 1895, when he joined the faculty, all that was demanded of the student was a course of three years of seven months each; in all, twenty-one months' instruction. Soon that was raised to four years of nine months—thirty-six months—more than half as much again. To-day, before the degree is granted, the university and the state demand six years of nine months (two years in arts and four in medicine), and one full year of twelve months in a hospital approved by the university. The three years of 1895 have given place to seven years, the twenty-one months to sixty-six. The time capital has been more than trebled, and the same must be true of the pecuniary outlay; and when we compare the difference in the quality as well as in the quantity of education afforded, when we realize the quality of the output, is it to be wondered at that the physician of to-day should demand a higher return?

MEDICINE AS A PROFESSION

And yet, gentlemen, while admitting that there is an evident increase in the number of those medical men who regard their work as a business, the noble fact remains that to-day as in all ages the lure of medicine is such that the majority follow it from pure love of the work and of their fellows. The majority still devote themselves to it with the old spirit, caring little about the monetary return so long as they are secure of a decent competence; they regard it as what it is—a profession and not a trade. Their life work is to bring healing to the sick, to make the weak strong, to soothe the suffering, to help their kind. This to them is before all else. And here, in aiding poor humanity, the physician's work approaches the divine. It is at least suggestive that, as Dr. James Douglas has pointed out, of the twenty or twenty-two miracles recorded as being performed by the Founder of the Christian religion, no less than seventeen are acts of healing, of raising the sick, of restoring sight to the blind, of curing the palsied, of so-called casting out of devils, or restoring those apparently dead to life. It was through this power in healing the sick that Christ impressed his divinity on his generation. Whatever our faith or want of faith, this must strike us as most significant. "From the Most High cometh healing."

Indeed, this same spirit of devotion to the main object of our profession has been shown in our generation more than in any other period of the world's history. In every center of population throughout the world, we have presented groups of medical men giving their whole time and all their energies to the investigation and perfection of methods not of cure but of prevention of disease. We can proudly state that ours is the only profession which, were the making of money its prime object, with open eyes and set purpose indulges in the suicidal policy of endeavoring consistently to reduce its means of sustenance. Our leading thinkers, our leading investigators, have before them the banishment from among us of the vast array of infectious diseases, and in their efforts have the loyal support of the whole profession. Thus in the body corporate of medical men, as in the body of each individual being, there is this constant war between opposing motives.

EVOLUTION OF MEDICAL IDEALS

Perhaps I have not been sufficiently following the biologic literature of the last few years, and what I am about to say is already a commonplace; but after a study of mendelian heredity I have wondered why no one has come prominently forward to demonstrate the why and wherefore of progressive evolution and its inevitability in the terms of dominant and recessive. So far as I can see, in every mating it is the positive acquirement or quality that is dominant; the defect or absence of the same that is recessive. Thus hairiness is apt to be dominant to smoothness or want of hairs; the presence of eye pigment to absence of pigment; with the result that if there be mating between the possessor of a dominant quality and a possessor of a recessive quality the offspring of the first generation all present the dominant quality. There it is, although not absolutely fixed; the recessive character is also present but latent; and if two of this generation mate the chances are that the recessive quality will show itself, but only in the proportion of one to four. Three out of four will present the dominant, the added quality; in one of the three firmly fixed, in the other two with the recessive quality also present but latent. In this way, you see, the dominant quality, acting on the majority of individuals of the strain, gradually becomes predominant, and there is the greater likelihood that if some further positive feature be acquired this will fall to the lot of some member of the major class; and so as the ages progress the inevitable tendency is to a steady increment of properties—to, in short, progressive cumulative evolution.

So it is with all true progress: it is cumulative; it has to be. Two centuries ago, beyond certain crude ideas regarding disinfection, preventive medicine was almost non-existent. The function of the physician was only to cure. Then this added idea of prevention showed itself in some of the greater men of the profession and steadily with successive generations, being a positive acquirement, it is becoming more and more a fixed principle of the profession.

Whither is it leading us? To this, it seems to me: The time is on us when the physician must make his livelihood, not for the cure of the patient but for preserving him in health and preventing him from falling sick. There will always be with us what may be termed physiologic medicine, the caring for women in normal childbirth, for the very young and the very old; always traumatic medicine or surgery; always a certain not inconsiderable amount of family medicine—for Johnnie will indulge in green apples so long as there are John-

nies and apple-trees, and will suffer in consequence. Nay, more, I do not in the least imagine that we shall gain ascendancy over pathogenic bacteria as a body. I feel convinced that if we drive out such diseases as tuberculosis, typhoid and scarlet fever, we shall weaken the general bodily immunity. I think that we are realizing more and more that a man does not so much escape the ordinary infectious diseases because he has a strong inherited immunity, as because, by good fortune, he has time and again been exposed to mild subinfectious doses of the virus, and in neutralizing these has gained such immunity that later he is able to resist doses which would otherwise set up acute disease; and doing this that he raises not merely the specific but also the general resisting power of the organism.

If, therefore, we eradicate certain specific germs which to-day are widely spread, we are in danger of lowering the general resistance to disease; our bodies will not be so well educated to resist, and we shall be apt to succumb to microbes and diseases which in our present state are incapable of attacking us.

It follows that I imagine no Utopia from which infection will be banished; only a state of generally improved conditions of existence in which the exanthemas and the severer infections will be much reduced in their incidence, and the active curative work of the physician will be definitely reduced, the preventive work as definitely increased. Now, although the bacteriologist, detecting tubercle bacilli in the milk of a cow, by bringing about the compulsory slaughter of the beast prevents, it may be, a series of infants from succumbing to tabes mesenterica, that bacteriologist—virtuous as has been his action—cannot bill all the families of a particular milk-route for what he has saved them; cannot say to the parents, "The estimated value of your child's life to you and to the community has been officially estimated at so much, the chance that it would become infected from this particular cow was such and such, wherefore you owe me so much." The idea sounds absurd. But, as a matter of fact, the bacteriologist has accomplished all this, and if the individual cannot be asked to pay, it is for the community to show its appreciation. The more medicine becomes preventive, the more incumbent does it become on the community and the state, rather than on the individual, to subsidize the medical man.

I am no socialist, far from it. To me the doctrine that all men are born equal and are equal is as repugnant as it is manifestly false. How could we hope for progressive development, for the advance of our race, if all were at the same dead level; and if, notwithstanding the improvement in the individual, brought about by wise course of life in favorable surroundings, his offspring were after all only equal to that of the individual injured by unfavorable surroundings? The idea is unnatural, is contrary to the knowledge of evolution. It is on the face of it idiotic to maintain that the child born with the stigmata of congenital syphilis is equal to the child of sound parentage. That all be given, as far as possible, equal opportunities, that all be given a fair start, is quite another matter. If, therefore, I recognized a likelihood that the conversion of medicine into a public service would reduce all medical men to a common standard, no one would offer more active resistance. But I foresee that it means nothing of the kind. We are thus, I firmly believe, within measurable distance of the nationalization of the medical profession. I want you, gentlemen, to realize this, to face it clearly, and, what is more, to be prepared to help toward its accomplishment, living lives that will at once be a credit and a help to all our body. Such a momentous change should come from within the profession, not be forced on us from without.

I am not alone in this opinion; there are, I feel assured, others on this platform, members of your faculty, who are equally convinced that this has to come.

EUROPEAN PROGRESS IN PUBLIC HEALTH WORK

For what are the signs of the times? We on this continent call ourselves progressive, and we are progressive, but in this matter the Old World is leading the way. It is in no sense derogatory to us of the New World if, busied with the vast task of settling and establishing a continent, older countries across the ocean with greater leisure are far beyond us in certain directions. We here, for example, are still in a medieval condition as regards our Public Health Service. Individual cities, like your own, may be striving valiantly to place health matters on a proper footing; but take the country as a whole, and what do we find? Instead of securing those who have expert training as municipal health officers and paying them well, your ordinary municipalities elect either the youngest and rawest practitioner in the district or the man who has been a failure in private practice, to whom the shamefully inadequate stipend doled out by a grudging municipality is better than nothing. With such incapable minor officials, the state board of health, however capable its higher officials, is constantly impeded in its efforts. Here Germany and England are far ahead. Take the British conditions, which I know best. There every municipality must have its trained health officer, possessing a diploma of public health of an accredited university, and those posts are so well paid that I know from experience that universities have difficulty in procuring the best men to fill their professional chairs in hygiene, because the stipends afforded by the largest cities and more populous counties are so high that the attractions the universities can afford are insufficient. There is thus developed in Great Britain a definite career in preventive and public medicine, which to-day is attracting to it scores of the brightest of our men—a public service with definite grades and opportunities for promotion, with office dependent on capacity, independent of local and party politics, with permanency of tenure and popular respect. Bumbledom, it is true, does not love it, but Bumbledom is forced to submit under fear of such pains and penalties that perforce it cleans up its house and its back yard and reduces its infantile and other mortality.

This, however, as doubtless you all know, has been put into the shade by the further developments of the last few months, marshalled by Lloyd George. It is difficult to arrive at a sober, disinterested opinion regarding Lloyd George, so strong is the feeling he has aroused one way or the other. It seems impossible for any Englishman to appreciate his correct measure. If one can arrive at any judgment from the parliamentary proceedings, say by studying the *Times*, there can be no doubt that those proceedings and the tone of public life in Great Britain have painfully deteriorated since he and his friend Winston Churchill have come to the fore. Doubtless, were I in the old country, with certain innate conservative tendencies, I should cordially loathe him. Seen dispassionately from a distance, he appears to be that rarest of combinations, a ranting demagogue possessed of constructive powers. In establishing the eye and artisan insurance, he was, it is true, only following

the lead of Germany, but his insurance against sickness has followed distinctly original lines. Briefly, he said that this payment on the part of or on behalf of the artisan and his family for insurance against sickness led to other obligations. If the government made itself responsible for payment for disability, it must provide the medical attendance, must see that the sick man or woman received due care according to a definite scale; and that this must be provided by the state. Thus to-day in Great Britain there is compulsory insurance against sickness and disability for all those whose earnings are below a certain amount, and in return the government provides medical attendance. The medical men in any district who accept the government terms become in this way servants of the state. The worker, male or female, is given the power of selecting his medical attendant from the panel, and having selected him he is paid by the government at the rate of something under two dollars per year per head. His interest, therefore, is to preserve the health of his clients—the less active sickness there is the better for him and for everybody. There are, I should add, special payments for drugs, maternity cases, tuberculosis, etc., which here I need not enter into.

So, after a sharp and very bitter campaign, medical conditions in Great Britain have been revolutionized. What must impress those who have followed the fight put up by the profession is that our brothers across the water were not opposed to the principle of Lloyd George's measure; on the contrary, they were ready to admit it. What aroused their fury was the way in which the bill was introduced; the way in which they, brought up to glory in their professional independence, were forced to convert themselves into public servants without so much as a polite "by your leave"; were told what should be the registration fee without consultation. To modify slightly an old saying, it was not what Lloyd George did, but the nasty way in which he did it. Wherefore, at first they refused to eat the Welshman's leek, but after it had been cut down somewhat and served in a more acceptable manner they eventually consumed it with fair grace. Now the measure has become law and matters are in process of adjustment. For example, the hospitals, both great and small, in Great Britain as here, have been established and are maintained by the voluntary contributions of the well-to-do. To-day, these supporters of the past are refusing further aid, on the ground that, as the rich are being heavily taxed by the government to meet the expenses of the new state of affairs, and as the government has made itself responsible for the sick poor, it and not they must bear the cost of medical charities, and must either make the hospitals complete state institutions as in Germany, or must afford so much per diem for each patient treated in the wards and in the outpatient clinics. It is doubtful if the government will consent to "taxation without representation"; whether they will pay for hospital maintenance without having a controlling influence on the hospital board. They must, it would seem, eventually obtain this control, and the nationalization of the hospitals must be a matter of the near future.

See what this signifies. The leaders of the profession are on the staffs of the hospitals. Men who have their paying patients among the well-to-do have refused thus far to accept the government contract and enter the public service. These leading physicians and surgeons will find themselves in the position of either resigning their hospital posts (which, when one considers what hospital opportunities and hospital positions signify, appears to me to be the unlikely course), or of continuing to serve, but now as government officials.

THE IDEAL OF SERVICE IN MEDICAL PRACTICE

Surely, therefore, and by no means slowly, Great Britain is embarked on a course that can lead only to medicine becoming a state service, just as are the army and the navy. From what we know of our brothers across the ocean, we may be sure that they will proceed by compromise; that they will be practical rather than logical in their advance. For long there will exist side by side the state practitioners, paid largely by stipend, and the private practitioners, consultants, surgeons, and specialists, paid by fee; but as the public medical service grows in extent it will grow in importance and desirability. There will be grades in the service, with possibility of promotion; valuable hospital and administrative posts to be filled. Inevitably the status of the members of the government service will come to be regarded as superior to that of the private practitioners. Once the world and his wife recognizes this, there will be no further difficulty: the whole profession will lapse into public service. It will, indeed, be exactly as with the army and navy. Your general or admiral, even your colonel or your commander, does not take his place in society and is not esteemed according to his wealth, but according to his position as a servant of the nation.

For this, gentlemen, we must realize: The race for wealth to-day is not a race for dollars; nor, after a certain point is reached, not difficult of attainment, is it a race for what dollars will buy. It is eventually a race for social status. If we can secure this status by other more honorable—or less vulgar—means, it is well for us. It is best for us to rejoice in our work for the work's sake and that alone; but if not all are able to attain unto this standard—and we must remember that ambition is healthy and laudable—then at least we do most good and least harm if, serving our fellows, we serve also the state, and develop a relative rank dependent on capacity and merit; comforted by the assurance that our work well done will bring us sufficient for our comfort, for the due education and maintenance of our family, and for our wife to meet the social enemy in the gate with due recognition. As medical men, what more ought we to need? There will be no socialistic dead level of sameness in such a future. Individual work and capacity will tell, though it will show itself mainly by position achieved and only secondarily by dollars.

This, it seems to me, is the future that lies open to us in this continent. It may be objected that here we have no Lloyd George and no workingman's insurance act to bring about the change. Quite so, but we have other influences. The development of an adequate and well-equipped public health service in every state of the Union is sure to come. And over a large part of the country, especially in the center and West, we have institutions whose influence undoubtedly is working toward the end I have indicated. I refer to the state universities and to the huge bonus which the states through these universities afford to the student who takes the six- or seven-year medical course. Even in institutions like your own, supported by private beneficence, I wonder if you realize that, while you pay what appear to be considerable fees, these fees represent only about half the cost of your education. The other half is a free gift to you from private individuals, and that not for your individual benefit but for the public good. This gift to the medical student, whether by the state or by

the philanthropist, can mean only that the public recognizes that good medical attendance is a public need—aye, a public service. It is an indication that the community is prepared to go further—to call to itself an army whose function is to save life, not to destroy.

So, gentlemen, it comes to this, that, despite all the present-day temptations to which I have referred, to-day and in the future as even in the past care must be not for ourselves but for our fellows. If we desire not so much an upper seat in the synagogue as a serene mind and self-respect as the greatest of worldly possessions, let us not trouble ourselves about money-making. With your training, all that is necessary will come to you—you need have no fear.

I happened a few hours ago to come across once more a short address which Rudyard Kipling delivered to the students at McGill University six years ago. I do not think I can conclude better than by quoting some of his words:

> Money dominates everybody except the man who does not want money. You may meet that man in your farm, in your village, in your legislature. But be sure that, whenever and wherever you meet him, as soon as it comes to a direct issue between you, his little finger will be thicker than your loin. You will go in fear of him; he will not go in fear of you. You will do what he wants; he will not do what you want. You will find that you have no weapon in your armory with which you can attack him; no argument with which you can appeal to him. Whatever you gain, he will gain more. . . . If your wealth is necessary for you, for purposes not your own, use your left hand to acquire it, but keep your right hand for your proper work in life.

Gentlemen, may you fare well in your life work.

SURGICAL PATHOLOGY *

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THE LACK OF AND THE NECESSITY FOR THE CORRELATION OF SUBJECTS IN MEDICAL EDUCATION

In the study of medicine each decade finds an increase of prescribed courses in the curriculums of the leading medical schools of the country. Not over thirty years ago instruction in pathology was given by the professors of medicine and surgery. The establishment of the chair of pathology was the first step from the custom of many years. Soon the chair of bacteriology was recognized as necessary, and a little later clinical pathology came into being. These topics came into prominence when an increase in knowledge made them too cumbersome for the professor of pathology and his staff to teach, burdened as they were with the constant increase in details in their own department. This increase in topics was not confined to offsprings of pathology alone, but was happening in all the major subjects. In surgery, there are found gynecology, genito-urinary, orthopedic, and oral surgery, all due to a widened scope and knowledge of the parent subject. These branches are well established in the minds of the practitioner and his patients, as shown by their recognition of the specialist, who is simply the ultrarefinement of the surgeon-barber of the sixteenth century. In his endeavor to be the possessor of the latest knowledge necessary for the best results in treatment, the embryo practitioner found that, on account of the unlimited mass of facts confronting him, he must choose one branch and confine himself to it. The medical schools, in the proper performance of their duty, provided instruction and suitable courses in these topics.

In the old days the professors of the various subjects, even of anatomy, were practitioners, each comprehending what every other professor in his medical school was teaching the students. Thus unity of purpose existed, a distinct advantage, in that the medical student from day to day understood without effort the semiclinical lectures and the relations of one subject to another. It must be conceded that the simplicity of subjects at the time also led to the same end.

Dating from the Renaissance in the study of anatomy and medicine, laboratories devoted to anatomy first appeared. At that period medical schools existed as establishments in relation to the laboratories of anatomy. As each subject in medical education was born, laboratories for each scientific branch were provided, since there were always scientists, especially in medicine, who desired to investigate things for themselves, as well as those desirous of augmenting knowledge by research. Moreover, in addition to the old-fashioned semiclinical lectures, to afford instruction by personal observations in the rapidly developing topics of medicine, laboratories and their adjunct demonstration rooms, were necessary. With the appearance of laboratories and laboratory workers, akin to pure scientists, on the teaching staffs of the various departments, and because the practitioner-instructors properly continued to deal with clinical subjects, two teaching groups were, unfortunately, formed in each medical school.

Because of this tendency of the scientists, wrapped up in the mysteries of the pathologic laboratory, to slip further and further away from the point of view of the clinician, the medical student is apt to be the sufferer. Many pathologists seem to forget that the majority of students who come before them intend to practice after they graduate. The fact that the individual elects to settle down in the enclosed life of the laboratory, deal in pathology, and teach a more or less abstract science indicates his mental attitude. There are many exceptions to this rule and there have been many in the past; however, it is fair to state that the interests of the pure pathologists are not those of the clinician.

On the other hand, with few exceptions, the clinical professors are out of touch with the laboratory. The countless clinical teachers on the staffs of the many medical schools of the country are not aware of what the pathologists of their individual schools know and teach on a given point. Because of this, the student fails, often until it is too late, to realize that he is studying pathology in order that he may have a better understanding of surgical and medical conditions and processes. The pathology that the student absorbs he is apt to carry in a separate niche of his brain, and his surgery and medicine in others, thus not having the study of pathology to assist him to the best advantage in his study of surgery and medicine.

From the point of view of medicine, the instructor in pathology may be presenting to the students gross specimens, among which may be a lung covered by fibrinous exudate. Should the instructor state, "The physical signs the patient has recently shown are as follows . . . and here before you is this beautiful demonstration of their cause," think of the mental picture the student by necessity conjures up when the gross pathologic specimens seem again to be alive before him, as in an actual clinical case. When this point is brought to the attention of the teacher in pathology, he is apt to reply, "That is

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the duty of the professor of medicine; I am expected to teach the abstract science of pathology." At the same time this teacher of pathology will feel that his domain is somewhat encroached on if the professor of medicine attempts the presentation of specimens to exemplify physical signs. If this deficiency in the teaching of pathology is brought to their attention many instructors of pathology reply, "These are but students; after they become practitioners they will obtain these associations of ideas in physical signs and pathologic conditions." If this be true, does not such an explanation intimate that correlation of ideas is always the best aid in learning? The same clinicians and pathologists will state that this or that prominent man was eminent as a clinician because in his younger days he had unusual facilties for doing necropsies, especially on the patients whose physical signs he had known from personal observation. Others may contend that these men possessed superior mental talents. Possibly so; but they directed their talents so that the point in hand was attacked from every possible side.

From the point of view of surgery, a clinical instructor in the routine of surgical teaching may present to the students a suppurative arthritis. At a remote period the pathologic staff of the school discourses in a purely abstract manner on the changes following the repair of abscess cavities, and possibly may mention that abscesses occur in joints. To return to the clinical aspect, the surgeon expounds on the necessity for drainage of the joint to limit as far as possible the toxemia; he may state that the usefulness of the joint will probably be more or less impaired, even speaking of adhesions and the separation of the cartilages. The average student cannot bridge the gap and visualize the actual pathologic changes, logically thinking over the abstract teachings gleaned in the department of pathology. The pathologist, with the almost countless themes that must be covered in the allotted time, cannot pause to mention physical signs, clinical course, and the treatment necessary for each pathologic condition and process that is touched on.

The surgeon, on the other hand, with his mind riveted day after day on the purely clinical side, his time taken up with clinical duties, cannot be expected to give in detail and discuss at length all the vagaries of the gross and microscopic changes occurring and likely to occur from the day of the infection of the joint until healing is complete and the process has reached a quiescent stage. How may such a lack of correlation in teaching be compensated for?

THE RÔLE OF SURGICAL PATHOLOGY

So far as surgery is concerned, the subject, surgical pathology, should be the connecting link in the student mind between surgery and pathology, in order that the student may readily correlate each point as it is presented. Surgical pathology is really a study of the clinical aspect of the pathologic conditions and processes coming directly under the notice of the surgeon, and not matter abstracted from the domain either of pathology or surgery. Surgical pathology, for example, should show the student how a given physical sign in a clinical process may be explained if the pathologic condition is understood.

The importance of this correlation of ideas for the medical student is not universally realized, nor is there any general comprehension of the rôle that surgical pathology should fill in medical education.

THE PERIODS FOR SURGICAL PATHOLOGY IN THE STUDY OF MEDICINE

Surgical pathology should commence as an introduction to surgery and its special branches, at the period when the student is well advanced in his study of introductory subjects, such as gross and microscopic anatomy, physiology, and physiologic chemistry, and at the time when he commences bacteriology and pathology, in order that these given subjects shall be studied side by side. This period is usually reached some time during the second year at the medical school. To round out his surgical course to the best advantage, moreover, surgical pathology should be reviewed in the last year. In the student's introduction to surgery, the subject, at best, is a new field in his education, but after he has had a period of time to correlate whatever he remembers, after he has seen considerable clinical material, attended many operations and followed their subsequent clinical progress, and heard lectures on surgery, he will grasp the subject from a much broader point of view.

TIME TO BE DEVOTED TO THE SUBJECT

To make a lasting impression on the student mind, the introductory course must extend over a considerable period. At least three hours a week throughout the year are necessary, of which two one-hour sessions may be devoted to discussion in the class-room, and one hour to laboratory work or clinical observations.

In the second period, two two-hour sessions of laboratory work for a quarter of the year are sufficient. This time may be evenly divided between the laboratory of the university hospital to facilitate instruction in human tissues, and the college laboratories of surgical pathology.

COURSE IN SURGICAL PATHOLOGY; TOPICS FOR STUDY

The student, during his first period, should read the given lessons in a text-book on surgery and study the pathologic processes in a text-book on pathology; this should be followed by conferences with the instructor, combined with laboratory work and the observation of clinical material.

The course should commence with one of the simplest possible processes and conditions that are departures from the normal, such as a simple injury; for example, an incised wound. The study of this will lead the way to all the interesting phases of repair, bringing in the more and more complicated forms of injury involving the various tissues of the body—skin, connective tissues, mucous membrane, muscle, bones, nerves, vessels, and the parenchyma of the various organs. The student has an opportunity to learn just what the injury does to the living tissues and to observe the pathologic processes and conditions that supervene. The discussion in the class-room must of necessity cover a wide range—gaping of the wound, hemorrhage, exudate (coagulated or fluid), proliferation of tissues, clinical terms, regeneration and repair, ideal, delayed and abolished healing, inflammation, infection, scar tissue, and the interference with function. In other words, much more than the actual study of the repair of an incised wound must be touched on by the students.

Attention is here called to the fact that inflammation as a topic has not been mentioned. It seems to make more impression on the students and to be better understood if the process is treated merely as an incident in all injuries, varying simply in degree. Confusion is thus avoided to a certain extent in the student mind between what the clinician understands by inflammation and what the pathologist teaches.

Under supervision, in the laboratory, a student may make a small incised wound in an anesthetized animal. The entire student section may see the wound gape, and the clinical changes presenting various physical signs may be followed to the termination of the process in repair. Microscopic sections, taken at the various stages of repair following the injury or operative wound, from both animal and human tissues, will serve to illustrate and furnish a basis for discussion of the physical signs and actual pathologic processes present. The physical signs must be considered with special reference to the pathologic conditions that produce each sign. The clinical course observed from day to day affords an opportunity to discuss the consequent change in the pathologic conditions. Coincidental variations in the physical signs must be dealt with at length.

To emphasize the rôle that infection plays, a hypothetic injury should be discussed from which all outside irritants may be excluded. In this way the cellular changes pure and simple, due to the injury alone, may be learned. The introduction of a hypothetic "non-irritating foreign body" into the tissues may be studied. The cellular reactions in such an experiment may be contrasted with those that occur in the presence of an "irritating foreign body" or one that carries various chemical elements into the tissues. This paves the way in the student mind for an understanding of the complicated and varied reactions of the living animal tissues in which infections are present, especially surgical infections. Comparisons may be constantly drawn between the hypothetic simple wound, a wound containing a "non-irritating foreign body," and, finally, an infected wound.

All the possible terminal phases of the surgical-pathologic process should be pointed out in detail, since these suggest what various forms of treatment might avail. It is not the idea that the treatment, as such, is to be taught, though to lose sight of treatment is a bad beginning for the medical student. His great rôle in afterlife, aside from attempting to prevent pathologic processes, is to treat them, and that he cannot treat intelligently unless he understands as much as possible, should be instilled into his mind. This attention to treatment, by necessity not touched on by the instructor in pathology, is one of the many little things that tend logically to connect, in the student's mind, pathologic matters with the clinical features of medicine and surgery.

In addition to the study of injuries and the repair of the various tissues compromised by the so-called surgical infections, a consideration of the special infections, such as the surgical aspects of tuberculosis, syphilis, anthrax, glanders, tetanus and hydrophobia, should also be included, and the surgical terms, cellulitis, abscess, furuncle, carbuncle, toxemia, septicemia, erysipelas, aneurysm, ulcer and gangrene, should be defined and explained. The study of diseases and injuries of anatomic structures, such as vessels, bones and joints, including synovial membranes of tendon sheaths and bursae, and the clinical-pathologic aspect of tumors, must also be covered at length.

Some time must be spent in discussing a normal as contrasted with a pathologic individual who has been subjected to an injury. The rôle that vascular changes and disturbances of metabolism play in the formation of ulcers and in gangrene must be emphasized. The bearing that the common constitutional diseases have on infections and the repair of operative wounds, is also important. For the sake of discussion, an operation of election on a simple hernia, restrained by a truss, in a person under 40 may be chosen. The question is whether or not such an operation shall be done on a person who has chronic nephritis, a heart lesion, diabetes or pulmonary tuberculosis accompanied by cough. Next may be considered an operation on a patient with the same conditions, for a simple inguinal hernia too large to be restrained by a truss; to make the problem complete, a strangulated inguinal hernia, an operation of necessity, should be mentioned. The advisability of operations on pathologic persons should be discussed, regarding not alone the repair of the wound, but also the effect of the anesthetic on organs of absorption and of elimination, the shock of the operation, and the elimination of tissue toxins.

In the second period, when the students meet the instructor in surgical pathology, best in the students' fourth year, very general topics should be taken up. Pathologic material from patients whom the students have seen both clinically and at operation serves well as a basis for discussion. For example, observation of coagulated exudate on the peritoneal coat of an acutely inflamed appendix will lead into the general topic of adhesions, peritonitis, the significance of coagulated and fluid exudates found at the time of operation and their relation to the prognosis. Microscopic sections may also be shown of the same appendix covered with exudate. At the time, sections of adhesions from other conditions indicating different characteristics may be on exhibition.

If there is in the given medical school a course in surgical technic, in which animals are used as subjects, the possibilities in teaching surgical pathology become almost limitless. It is of great advantage for the students to see for themselves the repair of tissue in common abdominal operations, in which healing has been almost ideal. Necropsies in operative abdominal conditions in man are always made under circumstances of peritonitis or some other unfortunate pathologic process. On very rare occasions, the surgeon, because of the necessity for a subsequent laparotomy, chances to see the result of his primary operation. Every surgeon realizes how infrequently these opportunities occur. By necropsy of animals that are making a good recovery as early as thirty hours, and at later intervals, after operation, the students may be shown the suture line of an intestinal anastomosis. Attention may be called to the integrity of the abdominal wall, and practical demonstration may be made of the stress the healing wound will withstand. Pointing out the errors in technic, such as resulting hemorrhage, intestinal leakage with the subsequent peritonitis, and excessive narrowing of intestinal lumen owing to too great invagination of intestinal wall at the time of suture, impresses the students with the importance of guarding against these dangers. This affords the students actual demonstration of the ideal and pathologic conditions that will obtain in similar circumstances in human abdominal cases shortly to be cared for by them as hospital interns.

METHODS OF INSTRUCTION

In teaching surgical pathology, the instructor must decide whether he shall be dogmatic or shall constantly indicate that there are but very few facts and that much is theory or hypothesis. Certain instructors believe that they undermine the confidence of the students both in their teacher and in medicine if they continually point out that there are many differences of opinion. Others state that students are not capable of judging or deciding for themselves if given several hypotheses attempting to explain a clinical phenomenon.

These two points of view are obviously short-sighted. As to the first, there is always repetition in teaching, and since several instructors may present to the students their opinions, failing to state them to be but their opinions, the students, when they confer together, as they are bound to do, find that the several statements are at variance. Naturally there is confusion, and their confidence in their several instructors is certainly undermined—just the thing each teacher sought to avoid by being dogmatic.

The second point of view, that the student cannot discriminate, is certainly vicious in itself. In the classroom the student may be blamed for not being able to think; and often as not (as an expedient) he is not allowed to; but, in the first clinical case that the student deals with, the instructor expects him to think and reason both in diagnosis and in treatment. Certainly the embryo physician must often use his wits, and the earlier he commences the better.

A medical student is a postgraduate student, and it is the duty of the instructor to state frankly what is fact and what is theory in discussing any phenomenon. If the instructor so elects, he may state his personal opinion of which is the best theory, assuring himself that the student understands it to be merely an opinion. The discussion of the instructor's opinion tends to widen the student's horizon, to fix the subject in his mind, and to encourage him to think. Many instructors will be disturbed by the free expression of a student's ideas, but it must be realized that in a class of seventy or eighty men many types are present. Their manner in meeting the instructor varies widely, depending on their early environment and education. All these differences must be allowed for by the instructor.

The main thing is that the instructor must realize that he cannot teach unless the student is willing to learn, and the more the instructor leads the student to reason, however skeptical he may be of the student's ability, the better teacher he is.

It must be realized by the instructor in surgical pathology that his subject is far from being a mathematically exact entity. There is but little that the student may learn by rote. And in the student's entire education, even though he be a college man, there are but few subjects that touch on a wider range of sciences than surgical pathology. Because of this, one of the simplest rules of teaching must constantly be borne in mind; that is, to be always informed of the student's conception of each subject from day to day. Simple questioning of the student, the ordinary method of instruction, is not sufficient. Leading the student into discussions and into asking questions concerning the physical signs and pathologic conditions instantly informs the instructor of the progress the individual student is making. Any one may make a seemingly clever answer, but it takes a well-oriented student to ask a sensible question.

Frequently by the very token, as stated, that surgical pathology, its teachings and the fundamental principles dealt with, are far from mathematical entities, it is difficult for the students to realize the wide variations in the physical signs, clinical course, symptoms and pathologic processes and conditions of even type diseases. They may read a given text description of a disease, pneumonia for example, and possess a fair working idea of the morbid process, be able to answer questions with reasonable intelligience, and fail miserably in diagnosis. The given clinical case did not happen to fit the typical text-book description which the students had read. On the other hand, the students do not fall into this pit of a case if presented to them by the clinician. The students realize that this given patient chances to present this or that peculiarity. They also realize that the next case of the same disease may present other peculiarities. When teaching was almost entirely clinical, as in the past, this very fact made the study of type diseases somewhat simpler, although they were less understood. The students read up the theory of the disease subsequent to each clinic and appreciated the similarity of points found in the text and those shown in the clinic. If these clinics are not given in the course of surgical pathology, each student of the class will have a different mental picture of such a condition as an infected wound, for example. The composite of the entire class would likely possess a very good concept of infected wounds, though the ideas on the subject of any one student would not be at all satisfactory.

This may be tested out in a simple manner for the purpose of informing the instructor and for a demonstration to the students to show the students not so much what they do not know as the pitfalls in their path and how they may be avoided. The written descriptions of an infected wound obtained from each student may be compared before the class. The instructor may describe to the students any infected wound that occurs to him and ask them what he has been talking about. An infected wound may be presented in the clinic and the instructor may ask each student in turn, "What is the pathologic condition?" He will be amazed and pained at the dissimilarity of the written descriptions, surprised to learn that but one or two recognized the condition he has described and be shocked to hear but two or three mention the correct pathologic condition. An instructor's first impulse is to complain of the ignorance of the students and to exclaim that they will never learn anything. He must, however, realize the root of the trouble and demonstrate the matter to the students, letting them see for themselves that they must appreciate the wide range of possibilities for injuries and disease and must also bear this in mind when reading from text-books. The students must be brought to see that if an infinite number of pathologic processes and conditions could be observed, every possible variation would be exemplified. For convenience in classification and for description, mile-posts along the clinical and pathologic road have been selected as types and have been given the various familiar clinical and pathologic names. By necessity there are pathologic conditions and processes not occurring at a mile-post, but nearer one than another; from such a mile-post will the process or condition receive its name.

Certain students readily grasp these facts and easily outstrip their companions in the study of surgery; while others, possibly those who have excelled at college in the classics, fall behind and never even reach the plane of apparently much poorer men. This often tends to discourage many who before have had no trouble as students, but cannot properly correlate the knowledge necessary to thoroughly understand the complex biologic facts that exist in living tissues from the time of the incident of an incised wound until its healing is complete.

CONCLUSION

Since surgical pathology shall bridge for the students the wide gap between pathology and surgery, the instructor should be trained as a clinician, and, in addition to being a person with interest in clinical matters, he must at the same time spend many hours in the laboratory, studying both the gross and microscopic aspect

of specimens from surgical conditions. Regarding these specimens, strict attention must be paid to the clinical course, the physical signs presented, and the outcome following operations or other treatment. Constant experimentation, involving the fundamental principles of surgery, should also be conducted, in order that, so far as possible, the instructor's knowledge of his subject shall be from his personal observations.

The surgical pathologist is to directly connect the thoughts of the student with the pathologic aspect of surgical conditions; he can therefore best serve his purpose in such a rôle by being an integral part of the department of surgery, making his associations more intimate with the teaching staff of surgery. Thus the surgical pathologist has more direct access to clinical material, and with the laboratories now supported by the department of surgery in many medical schools, facilities to study pathologic material are available. The association of the surgical pathologist with the clinical staff of the department of surgery is also by this means made more intimate; the laboratories of surgery become a clearing-house, as it were, of the clinician for his surgical material. Because of this, the clinical aspect of any concrete clinical condition, by discussions with clinicians, is kept fresh in the mind of the surgical pathologist, and he is not led away by the more or less philosophic and abstract point of view of the pure pathologist.

The field of the surgical pathologist is an exceedingly interesting one because of its concentration, enlivened by the clinical aspect, enriched by facts gleaned from microscopic examination of clinical material obtained at operation and constantly reviewed in the subsequent clinical course. Surgical pathology should introduce to the students fundamental surgical principles and prevent any separation of ideas and concepts of both normal and pathologic processes and conditions as taught in the departments of anatomy, pathology, bacteriology, physiology, physiologic chemistry and of surgery in medical education.

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TEACHING OF OTOLARYNGOLOGY

REPORT OF COMMITTEE APPOINTED TO CONSIDER THE BEST METHODS TO BE FOLLOWED IN THE TEACHING OF OTOLARYNGOLOGY IN UNDERGRADUATE AND POSTGRADUATE SCHOOLS.

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Committee of the Laryngological, Rhinological and Otological Society

The subject assigned to us for our deliberation naturally divides itself into two distinct parts, and yet, in the final analysis, the postgraduate teaching is closely dependent on the thoroughness of the undergraduate work.

TEACHING OF OTOLARYNGOLOGY TO UNDERGRADUATES

In order to ascertain what methods are followed and what views are held in the various leading universities of this continent on this question, your committee submitted a series of questions to the professors of otolaryngology in forty of the leading institutions, the list of these being compiled from the Carnegie Foundation Bulletin 4, entitled "Medical Education in the United States and Canada."

The questions were as follows:

1. Should the "course of instruction" be extended over one or two years?
2. How many hours should be devoted to this "course of instruction?"
3. What proportion should be clinical and what didactic?
4. In what order should these be given?
5. What should be the limits of such a "course of instruction" having in view the necessities of the general practitioner, and the proper balance of the subjects of a medical curriculum?
6. Should "operations" form part of such a "course of instruction?"
7. Should a separate examination in Otolaryngology form an integral part of the final examination?

N. B.—In answering the above questions, which are intended to ascertain the personal views of those responsible for otolaryngology in the leading medical colleges of the United States and Canada, it is desirable to indicate briefly also to what extent these personal views are carried out in the institutions with which the writer is connected.

Replies were obtained from some thirty-one institutions, including over twenty states and provinces so that the opinion elicited may be considered fairly representative. In perusing these reports, your committee was agreeably surprised to find so little divergence in either practice or opinion as the replies revealed, and have therefore the greater confidence in submitting the resolutions which form its conclusions.

We regret that we are unable to elicit satisfactory information as to the amount of "individual instruction" given to each student. Where the number in the classes are considerable (and if possible that number should never exceed six students), as Mygind[1] points out, "the student is apt to acquire superficiality in the examination of the patient. This fault is undoubtedly in many cases due to the teacher not having sufficient time to take each pupil individually and teach him all the details he should observe."

We note also that the idea still lingers in the minds of some of our leading instructors that didactic lectures form an adequate means of instruction. About one-fourth of those reporting asked for equality between didactic and clinical instruction. Surely this cannot be right. The regions involved in otolaryngology are such as lend themselves least readily to demonstration by lectures, or even by lecture-clinics. It is only in so far as the student receives "individual instruction" on the living subject, that he can acquire an adequate knowledge of his subject in the limited time which can be spared in the overcrowded medical curriculum.

This "individual instruction" requires time, patience and competent assistants, but these are well worth the expense involved, as by properly instructing the student of medicine in otolaryngology we will do much to avoid the conditions which now lead to the foisting of vast numbers of what we may style pseudo specialists on the public.

Another point which your committee deems worthy of criticism in dealing with these reports is the scope of the instruction with regard to text-books. Such a course should get as far away from the text-book as possible. We cannot in the least agree with the gentleman who reported, in answer to Question 5, "that the contents of the required text-book on these subjects should be covered *chiefly by recitations.*"

Every student of medicine has a right to be graduated primarily as a general practitioner. The first task of every general practitioner is diagnosis. No amount of text-book recitation will develop the ability to diagnose correctly in otolaryngology, unless there go beforehand the visual knowledge of the normal as contrasted with the abnormal, the education of the eyes,

1. Mygind: Brit. Med. Jour., Aug. 24, 1912.

ears and fingers. This education means actual work on the patient and the "course of instruction" should therefore be almost wholly clinical.

By Question 5 we hoped to elicit a sufficient answer to a difficult problem. With the daily advance of medical science, new subjects are demanding, with loud voices, admission to an already overburdened course, and even in those universities in which the course is one of five years, it is being found needful to relegate some of the science subjects to the preparatory course, so as to give the student time to digest what he sees daily in the wards. The best of judgment is therefore called for in determining what shall form a part of the minimum curriculum in medicine.

On the other hand, as Gradenigo[2] has pointed out, "what doctors need in their daily practice should be made compulsory, without expecting them to be familiar with complicated examinations and operations." This states in a nutshell what should be included in the "course of instruction" in otolaryngology. The student, therefore, should be made thoroughly familiar with the anatomy, should be taught the use of the instruments of examination, should be able to recognize the normal parts, should be familiar with their appearance in the acute inflammation and in the commoner chronic affections, and finally should be able to recognize and understand the principles of treatment of the acute affections.

With this information in his possession he will have a solid foundation on which to build his superstructure, will be able to read his text-book in connection with a given case intelligently, obtain a comprehensive knowledge of the condition of the various organs of his patient, and, finally, be in a position to secure early and useful assistance from the specialist. Inability to examine a larynx has often led to a failure to recognize malignant disease in its incipient stages, and many examples will occur to all of us in which the lack of training of the student has been to the great suffering of his patient and the disgrace of the practitioner. Such a course will not be complete, however, without instruction from his professor as to what symptoms demand the skill of the specialist, and the unwisdom and criminality of failure to refer the case for examination by the thoroughly trained specialist, when such symptoms arise.

The last question elicited practically unanimous replies that a separate examination conducted by the professor of otolaryngology should form an integral part of the final examination. The association of a question or two on the ear, or throat, on the paper in surgery must be relegated to the past.

Your committee therefore begs to recommend for your adoption the following as the minimum requirements of the undergraduate course in otolaryngology:

RECOMMENDATIONS FOR MINIMUM REQUIREMENTS IN UNDERGRADUATE OTOLARYNGOLOGY

1. Each student of medicine is entitled to receive sufficient instruction in otolaryngology to enable him to deal with the parts concerned as intelligently as with the rest of the human body.

2. For this purpose he should be familiar with the anatomy of the parts, possess a practical working knowledge of the simpler instruments of examination, be able to recognize familiarly the normal appearance of the structures, be practically acquainted with the pictures presented by the acute inflammations, and the commoner diseases of the organs involved, and how to treat the same. He should, further, be instructed to recognize the symptoms of serious complications, the wisdom of early associating the greater knowledge of the specialist in the care of his patient, and the dangers associated with all operations on the parts involved, except in the hands of the competently trained specialist.

3. For this "course of instruction" a share of each of the two final years of the medical curriculum is essential.

4. The said "course of instruction" should embrace both clinical and didactic teaching, preferably intermingled, the clinical to be greatly in excess of the didactic—at least in the proportion of three to one.

5. Clinical instruction should be given to small groups of students, preferably in classes of six, each receiving individual instruction, and this together with the didactic work should extend over a period of at least forty hours in the time of each student in each of the two years.

6. Operations should not form any part of the preceding course, except that in so far as may be possible, each student should be permitted to assist at the performance of the simpler varieties, that he may become practically acquainted with the methods of procedure and the objects sought.

7. A special separate examination in otolaryngology, preferably clinical, conducted by the professor of otolaryngology, should form part of the final examination in medicine of every university, and every licensing body.

8. A copy of these resolutions should be forwarded to the medical faculty of every university and college of medicine, as well as to every state or provincial examining board, in the United States and Canada.

II. TEACHING OF OTOLARYNGOLOGY TO POSTGRADUATES

The second part of this report concerns postgraduate instruction in otolaryngology, and while the former was aimed at the production of the well-rounded general practitioner, this must endeavor to achieve the evolution of the scientific specialist.

The subject is much to the fore on this continent and elsewhere. Last year the *Journal of Laryngology, Rhinology and Otology* published a series of able articles on the education of the specialist in throat, nose and ear disease, in Denmark, Germany, Italy, Austria-Hungary and France. In Great Britain it formed a topic of general discussion at the Liverpool meeting of the British Medical Association. On this continent, it has led to the publication of recent papers by Shambaugh,[3] Ellett,[4] Cragin[5] and others, and formed the basis of an interesting discussion before this society two years ago, a discussion which led to the formation of the committee now reporting. A pronouncement by this important organization will therefore be quite apropos at this serious juncture, for we must not forget that with privilege comes responsibility, and this society, whose membership is so extensive and whose influence is so wide-spread, should—*noblesse oblige*—lead, not follow, in the making of an intelligent public opinion.

According to Mygind[1] the postgraduate education of the specialist on the continent may be divided into three stages: (1) a compulsory preliminary training at the university for a period of one term; (2) a postgraduate course at a university or hospital; (3) a service as assistant at a special public clinic.

We all know the facts, and we deplore them: now what can be done to face and overcome the difficulties of the situation? We must first decide what constitutes the standard of proper training, then provide for its acquirement, and finally bring such influence to bear on state legislatures as to secure the legal enactment that only specialists provided with this training may practice as such.

Those who have written on this subject are agreed that not less than two years should be devoted to preparation for practice as a specialist. This should be preceded, however, by one or more years spent in general practice, or better as house-man in the medical and surgical services of a good hospital, at least half the time being devoted to surgery. The specialist course itself must embrace highly specialized studies in the anatomy, physiology, embrylogy, pathology,

2. Tr. Am. Laryngol., Rhinol. and Otol. Soc., 1911.

3. Shambaugh, G. E.: The Specialist in Medicine, THE JOURNAL A. M. A., Sept. 21, 1912, p. 1088.
4. Ellett: South. Med. Jour., January, 1911.
5. Med. Rec. New York, lxxx.

physics and therapeutics which bear on the subject, operations on the cadaver, etc.

The time required for this course will occupy at least six months. In addition the candidate must subsequently serve as a resident assistant in a special hospital or in a similar position in the special service of a large general hospital, for a period of not less than eighteen months, and to provide sufficiency of experience, the special clinic should work daily, and should have at least fifteen beds assigned to its use. In this connection it is well to insist that during the last six months of his service, the candidate shall act as a senior assistant in the major operations, and personally perform those less important.

Where shall such training be provided? Without doubt the scientific part must be placed solely under the control of the universities, for these are the proper bodies to provide postgraduate instruction.

To add a fitting coping-stone to the structure whose erection we are considering, the candidate should finally be compelled to present himself to one of the universities, supplying the postgraduate instruction indicated above, for examination on the work embraced in the entire course, and the successful candidate should be given a degree; that of Ph.D., (Oto-Laryngology) has been suggested in various quarters.

The final step, that of securing legislative measures, would of necessity be difficult to attain, but public opinion will ere long demand that we be protected from the incompetent specialist, as we are now from the ill-trained dentist.

With regard to postgraduate teaching in otolaryngology your committee begs to recommend:

1. That the time has arrived to standardize the degree of scientific attainment, and of clinical training, which shall qualify those who wish to begin the practice of otolaryngology as a specialty.

2. That the report of this committee now submitted forms a suitable basis for such a standardization.

3. That a committee representing this society be appointed to work out the details.

4. That the other important associations of otolaryngologists on this continent, namely, American Laryngological Society, the American Otological Society, the American Medical Association, the Academy of Ophthalmology and Otolaryngology, be and are hereby invited to appoint representatives to act with the above committee from this society, so that the action finally taken shall represent to the fullest extent the consensus of opinion of American and Canadian otolaryngology.

CARE OF THE UMBILICAL STUMP

A BACTERIOLOGIC STUDY *

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It is not my intention to consider the clinical aspects of infections which affect the new-born infant through the umbilicus. The seriousness of such infections is well recognized. The more severe and fatal forms present clinical and post-mortem evidence which forces itself on the observer. The proof that milder types of infection originating in the umbilicus cause fever, jaundice, loss of weight and gastro-intestinal disturbances in the new-born infant is difficult to bring forward. It has been demonstrated that serious and fatal umbilical infections can exist and give no local antemortem evidence of their presence. It would not be unfair to conclude that milder forms could exist and the infant recover without local manifestations of umbilical disease. Such infections occur in isolated cases and in epidemic form in institutions. There may be the moist gangrene with the foul-smelling, putrefying cord, a simple omphalitis with a discharge of varying character, an ulcer lying between the folds of the skin at the navel, a more or less diffuse cellulitis, possibly with abscess formation. The arteries and veins may be involved with little or no local evidence of this condition. Infection of the arteries is more frequent and less serious than that of the vein which is almost invariably fatal. The septic form of umbilical hemorrhage may result from infection entering through this wound. Some of the more specific infections, such as diphtheria, tetanus and erysipelas may originate at this point. The much dreaded sepsis may enter and destroy the new-born babe and leave very little evidence of its entrance at this point.

In children born spontaneously, the cutting of the cord makes the only wound on its body, and this should be considered as important a wound as one which enters the peritoneal cavity. Other sources of infection must be admitted, but many of them are in no way under our control.

The care of the umbilical stump is something for which obstetricians and nurses are directly responsible. Are they fully aware of their responsibility? Certainly many of us would not care to have our peritoneal cavities opened under the same precautions which we take in severing and caring for the umbilical cord. This is especially true when we consider the great susceptibility of the new-born child to infection. Anatomically, the cord leads almost directly into the peritoneal cavity. The arteries are almost intraperitoneal and the postnatal thrombus forms an ideal place for the development of organisms. The vein, in addition to being closely associated with the peritoneum, leads directly to the liver and communicates with the large venous circulation. The lymphatics are in almost direct communication with the peritoneum. Wharton's jelly becomes virtually subserous by its extension within the abdominal wall.

The absorptive powers are great, as has been demonstrated by Epstein[1]—who used different chemicals on the cord and was able to demonstrate them in the urine within a very short time.

Clinically, there is abundant proof that fatal infections may enter through the umbilicus and rapidly overwhelm the new-born babe. Eröss[2] reported 1,000 cases, with fever in 43 per cent. and evidence of navel infection in 23 per cent. Roesing[3] in 100 cases found fever in 21 per cent. and umbilical infection in 9 per cent. Götzl in 130 cases found trouble with the navel in 13 per cent. Berend and Racz,[4] in 1,000 babies who were tubbed, found infection in 19.7 per cent., in 1,000 not bathed in only 9.3 per cent. Doctor[5] investigated a series of cases in which 420 infants were bathed, 33.15 per cent. of these had a febrile reaction and 16 per cent. showed infection of the navel. Of 462 babies with a long stump of cord, which were not bathed, there was fever in 25.83 per cent. and umbilical infection in 10.12 per cent. There was fever in 11.88 per cent. and

* Read in the Section on Obstetrics, Gynecology and Abdominal Surgery of the American Medical Association, at the Sixty-Fourth Annual Session, held at Minneapolis, June, 1913.

1. Epstein: Ueber antiseptische Maasnahmen in der Hygiene des neugeborenen Kindes, Medizinische Wandervorträge, Berlin, 1888.
2. Eröss: Beobachtungen an 1,000 Neugeborenen über Nabelkrankheiten und die von ihnen ausgehende Infection des Organismus, Arch. f. Gynäk., 1891, xli, 409.
3. Roesing: Beobachtungen an 100 Neugeborenen über Temperaturverhältnisse und Nabelerkrankung, Ztschr. f. Geburtsh. u. Gynäk., 1894, xxx, 176.
4. Berend and Racz: Beiträge zur Frage der Nabelpflege und des Badens der Neugeborenen; Ref., Zentralbl. f. Gynäk., 1904, No. 39, p. 1173.
5. Doctor: Ueber die Heilung und Behandlung des Nabels, Arch. f. Gynäk., 1894, xlv, 539.

navel infection in 3.46 per cent. of 230 infants with a short stump which were not bathed.

In 1896, Lambert[6] reported a series of 147 cases in which there were five deaths from infections originating at the umbilicus. This is a mortality of about 3.4 per cent. He was pleading for a better treatment of the umbilical cord. We all see such cases not very infrequently.

Dickinson,[7] in a most excellent and thorough consideration of this subject, collected from the literature more or less complete observations of over 10,000 new-born children. He says: "Fever due to navel infection, from 3.5 to 22 per cent., studied on 2,755 babies (the higher percentages in summer); well-defined general sepsis, 5.25 per cent., the review embracing 1,329 babies; deaths from sepsis, a full 1 per cent., the material being 6,011 new-born children. The ratio of septic deaths to early deaths from all causes varies between 15 and 40 per cent."

More recently, 795 cases treated in the Virchow-Krankenhaus by ligation and a sterile dressing smeared with oil showed inflammatory disease of the navel in 15, or 1.7 per cent.

In an endeavor to find some means of preventing these infections, I have been led to make some investigations which it is my intention to present at this time.

The first step has been to find out whether or not organisms are present on the cord and surrounding skin immediately after birth. It would be only natural to find them present.

Cholmogoroff[8] removed, with sterile scissors, pieces of the umbilical cord immediately after birth in five cases. Cultures made from these were all negative. He also investigated cases which were treated by different methods and found various staphylococci, once the streptococcus and various non-pathogenic organisms. He concluded that the cord was sterile at birth and that the germs were introduced from without.

It would be very easy for the surface of the umbilical cord and of the child's abdomen to be contaminated with any organisms present in the mother's vaginal tract or on the external genitalia. If they were on the surface, it would be very easy for them to grow and invade the tissues.

In order to prove the presence or absence of organisms on and around the cord immediately after birth, the following procedure was employed:

A platinum loop was used to scrape the cord and surrounding skin immediately after birth and before the cord was handled or manipulated in any way. Agar plate cultures were made from the material caught on the platinum loop. All these cultures were made under as nearly the same conditions as possible in the Elliot Memorial Hospital at the University of Minnesota. No attempt was made to isolate the anerobic organisms.

There were sixty-five cases examined in all. In seventeen of these there was no growth. Non-pathogenic organisms were found independently of any pathogens in thirty-three cases, or over 50 per cent. of those examined. Pathogenic organisms were found alone or associated with non-pathogens in twelve, or 19.46 per cent. Some variety of staphylococcus was found in eight instances and some form of the *B. coli* group in four cases.

The significance of this is evident. The cord and its surroundings show the presence of pathogenic organisms in nearly one-fifth of the cases immediately after birth. This is true where the cases are conducted amid the aseptic surroundings of a delivery room. The percentages might easily be much higher where less rigorous asepsis is carried out. This, of course, is no argument for carelessness in the subsequent handling of the cord, for it may be infected at any time.

What are the essentials for the growth of organisms? (1) the presence of the germs, (2) proper degree of temperature, (3) a suitable culture medium and environs, and (4) the presence of moisture.

It is evident that it will be very difficult to eliminate entirely the presence of bacteria, but we can avoid contaminating the parts with germs and we can assist in their removal by the use of aseptic and antiseptic measures. The body heat furnishes the proper temperature and, of course, cannot be interfered with.

The devitalized tissue of the cord forms a fine medium for the growth and development of the organisms. This can be removed by ligating or clamping the cord close to the skin margin. It has been pretty well demonstrated that better results are obtained by leaving as little cord as possible. Doubtless the methods of amputation proposed by Dickinson, which in his hands have given almost ideal results, accomplish this most thoroughly.

The presence of moisture may be controlled by having a small stump of cord and keeping it under conditions which favor rapid drying. Various experiments have been conducted along this line and it has been found that exposure to air is one of the best means of accomplishing this end. Hygroscopic powders have been used with some success—good results have been obtained by the use of astringent and inert powders. Equally good, or better results have been obtained without any dusting powder. Oily dressings have not given as good results. Dry occlusive dressings have been used. Gauze seems to permit of better and more rapid mummification than cotton.

In order to fulfil these conditions, the new-born babies have been treated as follows at the University of Minnesota Hospital:

After cessation of pulsation, the cords were clamped near the skin margin, the surrounding skin and cord cleansed with alcohol, and the clamp removed, to be replaced by a ligature in the groove made by the clamp. The end of the cord and the surrounding skin were painted with one-half strength tincture of iodin in some cases and in others left untreated. A sterile gauze dressing was then tied over the end of the cord. The babies were oiled for three days, then washed, but no tub baths were given until the navel was healed. Each day the stump and surrounding skin was washed with alcohol and the dressing changed when necessary.

A study of the clinical courses of these cases subsequent to delivery may be of interest and profit.

First in order is a consideration of those cases from which cultures were taken. In all there were sixty-five cases, one of these was a still-birth, there were three unsatisfactory cultures, which leaves sixty-one for study.

There were seventeen cases which showed no growth; of these four, or 23.5 per cent., showed a febrile reaction of over 100 F; there was one case with jaundice and the average maximum weight loss was 209 gm.

6. Lambert: Umbilical Sepsis in the New-Born Occurring at the Nursery and Child's Hospital, New York, during 1896, Med. News, New York, 1897, lxx, 557. Petermöller: Neue Beiträge zur Behandlung des Nabelschnurrestes der Neugeborenen, Monatschr. f. Geburtsh. u. Gynäk., 1911, xxxiv, 207.

7. Dickinson: Is a Sloughing Process at the Child's Navel Consistent with Asepsis in Childbed? Am. Jour. Obst., 1899, xl, 389.

8. Cholmogoroff: Die Mikroorganismen des Nabelschnurrestes Ref., Jahrb. f. Kinderh., 1890, xxxi, 145.

Of the thirty-two cases from which non-pathogenic organisms were recovered, there were eight, or 25 per cent., with febrile reaction; three infants were jaundiced and the average maximum loss of weight was 188 gm.

There was a temperature rise in three, or 25 per cent., of the twelve cases in which pathogenic organisms were found; one was jaundiced and the average maximum weight loss was 202 gm.

The figures are so close for the different groups that the only conclusion one could draw would be that so far as this series is concerned it made little difference whether or not the organisms were present at birth.

There was no definite evidence of any serious infection of the navel. Two were somewhat reddened without any febrile reaction, jaundice or marked loss of weight. There were two with some foul odor, one had a febrile reaction of 102 F. and a weight loss of 340 gm. The other had no reaction. Neither had any jaundice. A number of others did not heal so rapidly as usual but showed no signs of infection. None of these babies died and all left the hospital in good condition.

Fifty-eight infants were treated as outlined above with alcohol and dry dressing. Of these, fourteen, or 24.13 per cent., had a rise in temperature to 100 F. or over; eight, or 13.08 per cent., were jaundiced, and of these four had fever and there was an average maximum loss of weight of 246.2 gm. The average loss of weight in the febrile cases was 314 gm. Five, or 8.6 per cent., had slight local evidence of navel infection, but none of them had a temperature rise to 100 F. The cord came off in five and one-half days on an average.

In the second series of cases, tincture of iodin was used to paint the cord and surrounding skin. Otherwise the treatment was the same as in the preceding series.

There were 186 babies treated in this way. The temperature rose to 100 F. or above in forty-two, or 22.58 per cent. of these; fifteen, or 8 per cent., were jaundiced, of which five had a febrile reaction. The average loss of weight was 228.05 gm. In the cases with fever, this loss amounted to 285.19 gm. Ten, or 5.37 per cent., had slight local evidence of infection of the navel, only three of which had any fever. The cord came off in seven and one-half days on an average. None of the babies in either series had any evidence of serious or fatal infection originating in the navel. How many of these febrile cases were caused by absorption of some toxic substance or the entrance of organisms through the umbilicus it is not possible to state. Many conclusions cannot be drawn from this rather small amount of material.

It is evident that some facts can be stated.

1. The cord is contaminated with pathogenic or non-pathogenic organisms at or immediately after birth in a large percentage of cases.

2. It is possible quite effectively to combat serious umbilical infections by comparatively simple methods; as shown by this report of over 200 cases with no mortality from this cause.

3. There seems to be little choice between the two methods used in these cases.

4. Jaundice in the new-born child is frequently associated with fever. It would not be illogical to suspect that this might originate by some agent introduced through the umbilical vein or lymphatics.

5. Febrile reactions are common in the new-born infant and are associated with other disturbances, such as a high primary weight loss and jaundice. They are due, no doubt, to many causes, but we, as obstetricians, should see that those due to infections entering at the umbilicus are reduced to an irreducible minimum.

For assistance in this work I am greatly indebted to the interns and nurses at the University Hospital, and especially to Prof. W. P. Larson for guidance in identifying the various organisms which were found.

ABSTRACT OF DISCUSSION

DR. CHARLES S. BACON, Chicago: I have made a practice for years of ligating the cord immediately after birth just at the juncture of the skin and cord, leaving a button simply large enough to prevent the sliding of the cord, and then dressing this with sterile cotton after first washing with alcohol. Every day I wash with alcohol and reapply sterile cotton. I have not forbidden the bath of the baby, believing that the amount of contamination in the bath-water is slight and is counteracted entirely by the immediate use of alcohol, which is the only safe antiseptic to use on the baby. With this method of treatment I have seen no serious infections and very rarely any infection at all. That there is a good deal of danger from the cord I have no doubt. I have myself seen a case of tetanus in midwife practice in which the bacillus was found around the navel. I believe that these observations can be extended to a variety of conditions, which will settle for us whether or not the bath is really accompanied with danger provided a safe antiseptic like alcohol is used immediately.

DR. N. SPROAT HEANEY, Chicago: I consider the clamp that Dr. Adair mentions a good thing since it squeezes out the moisture and allows the cord to dry out early. The earlier that the cord drops off and the wound heals the better, so the best treatment of the cord is that which best promotes this and at the same time best protects it from infection. I believe that cutting the cord long is better than cutting it short. When the cord is cut short the invagination of the umbilicus draws the stump in, and it becomes so closely approximated to the child's abdomen that it stays moist unduly long and does not drop off early. If cut longer and at the time squeezed dry, the long dry cord, wrapped in the sterile gauze abdominal band, allows the air to dry out along the whole extent of the cord and the cord consequently drops off earlier. This was our experience in Vienna with the short and long cutting of the cord. Cotton is especially objectionable since it is too impervious to the air. I should not want a laparotomy wound manipulated daily, and for the same reason I should not want the child's cord to be manipulated daily. I should want it made as nearly sterile as possible at the time of birth and left untouched as much as possible thereafter, having dressings changed only when wet or soiled.

DR. F. L. ADAIR, Minneapolis: In no branch of surgical work is asepsis more essential than in obstetrics, and I think further that we forget, many times, that we should carry our asepsis beyond the delivery of the mother and apply it to the baby also. In answer to Dr. Heaney, who said that the long cord drops off earlier than the short, I wish to say that this may not be desirable if we have a healthy wound covered with a scab. There is no better protection for the granulation tissue under the dry cord than a dry scab which covers it. Therefore, the statement that the long cord drops off early may not indicate a desirable condition.

Birth-and-Death Bookkeeping.—We need, first of all, to do what Sweden has done for 150 years, namely, to keep proper vital statistics. Vital statistics are the bookkeeping of health, and we cannot economize health any more successfully than we can economize money unless we keep books.—Irving Fisher, Ph.D., Professor of Political Economy, Yale University.

OPERATIVE TREATMENT OF CANCER OF THE STOMACH *

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The surgical treatment of cancer of the stomach compares favorably in results with the treatment of cancer of any other organ in the human body. When it is taken into consideration that nearly one-third of all cancers occur in the stomach and that their early discovery is a necessary factor in the cure of the disease, the necessity for a clear conception of the value of the various signs and symptoms is at once manifest.

With the hope of obtaining some definite information on these important points, an investigation was made in our clinic of the histories of a thousand patients submitted to operation for cancer of the stomach. These operations were performed between Jan. 1, 1894, and Dec. 31, 1912. For purposes of study they have been classified as follows: resections, 378; palliative operations, 246; explorations, 376.

The diagnosis of cancer of the stomach cannot often be made early enough to obtain a radical cure by operation, but a diagnosis of some condition of a surgical nature, probably cancer, can be made in time to permit operative interference in more than one-third of all cases (378 out of 1,000). The early diagnosis does not depend on any sign or symptom due to the cancer itself, but on the mechanical conditions produced by the growth. Therefore, in cases of suspected cancer of the stomach the recognition of such mechanical conditions should be the first aim of the diagnostician.

A probable diagnosis can be established by simple methods. In 67 per cent. of the total number of cases in this series tumors, some of which were of considerable size, could be palpated. The idea prevalent in the past that finding a tumor indicated an inoperable condition has been proved a mistaken assumption. A movable tumor is a favorable condition, especially if accompanied by early obstruction. We have a number of cases on record of patients who were operated on after a tumor was discovered, who are alive and well after a number of years.

Food remnants in definite amounts were found in 53.3 per cent. of the series, and gross obstruction was present in 20 per cent. Since more than 50 per cent. of all patients with cancer of the stomach have food remnants, it will readily be seen that, next to tumors, food remnants are the most important sign, not necessarily of cancer of the stomach, but of mechanical obstruction. A combination of tumor and obstruction is nearly pathognomonic of cancer in every case otherwise suspicious, and these two easily obtainable signs are of the first importance. Tumors, if present, are usually palpable and obstructive. At least 75 per cent. of cancers of the stomach have their origin in the pyloric end, a situation in which diagnostic conditions develop early. In this connection loss of weight is an important sign; the average loss in this series was 30 pounds.

Cancers of the body and fundus of the stomach occur in about 25 per cent. of all cases. When located at the cardia these growths produce early obstruction, but are not as yet surgically removable. In the body of the stomach but few can be diagnosticated sufficiently early to permit operation, because they are situated behind the margins of the ribs where a tumor cannot be palpated until a late stage, and, because of the wide gastric lumen, obstruction is a late development. In the few cases we have been able to diagnosticate early enough to warrant operation the patients were thin and gastroptosis was present, which made a tumor palpable.

The evidence furnished by the Roentgen ray is next in importance to the discovery of tumor and food remnants. It is a valuable aid in the diagnosis, not because it demonstrates in the early stage that cancer is present, but because it shows deformities and muscular deficiencies that are evidences of cancer. It is also of great importance as a means of elminating from the operative group those advanced tumors of the body and fundus of the stomach which lie concealed under the ribs, and which have already progressed beyond the reach of surgical aid. The Roentgen ray also gives valuable confirmation as regards the presence of obstruction and tumor in cases of cancer of the pyloric end of the stomach.

The examination of the contents of the stomach during the curable period of the disease is of relative value, but is not pathognomonic.

For purposes of comparison, an investigation has been made in our clinic of a thousand cases of ulcer of the stomach and duodenum in which operation has been performed within the last six years (from Jan. 1, 1907, to Dec. 31, 1912). There was an average total acidity in these cases of above 63, more than five-sixths of which was free. In the thousand cases of cancer of the stomach, there was an average total acidity of 31, about one-third of which was free. These data bear out the accepted hypothesis that low acidity and especially low free hydrochloric acid content is indicative of cancer of the stomach. Low acidity, however, may be found in a large variety of conditions, but one fact was noted particularly, that is, a cancerous stomach always contained some acid although the free hydrochloric was often absent. The more advanced the case the lower the acidity and the less the free acid content. Lactic acid was found in 43 per cent.

Blood in some form was found in 73 per cent. of the cases. Severe hemorrhage from the mouth occurred in 4 per cent., coffee-ground vomit in 6.25 per cent., and hemorrhage from the bowel in 9 per cent. Occult blood in the stool was the rule. Occult blood is present, however, in so many conditions other than cancer of the stomach that its value as a positive sign is not great. Smithies[1] states that the Oppler-Boas bacillus was demonstrated in 93.8 per cent. of the last 146 cases of gastric cancer observed in our clinic. These figures were obtained by oil immersion of smears stained by the colored agar method.[2]

The gastroscope has not yet been perfected for practical use, although a great deal of experimental work has been done with the instrument (Jackson,[3] Plummer,[4] Janeway[5] and others) which promises well for the future.

A history of gastric disturbance precedes cancer in a large number, if not the majority, of cases. The average duration of symptoms in the series of one thou-

* Read in the Section on Obstetrics, Gynecology and Abdominal Surgery of the American Medical Association, at the Sixty-Fourth Annual Session, held at Minneapolis, June, 1913.

1. Smithies, Frank: The Significance of Gastric Ulcer with Respect to Gastric Cancer. A Study of 566 Consecutive Operatively and Pathologically Demonstrated Cases of Cancer of the Stomach, THE JOURNAL A. M. A. (to be published).
2. Smithies, Frank: A Method for the Microscopic Examination of Gastric Extracts and of Feces, Arch. Int. Med., June, 1912, p. 736.
3. Jackson: Tracheobronchoscopy, Oesophagoscopy and Gastroscopy, 1911.
4. Plummer: Quoted by Jackson, see footnote 3.
5. Janeway: The Relation of Gastrostomy to Inoperable Carcinoma of the Esophagus, with a Description of a New Method of Performing Gastrostomy, THE JOURNAL A. M. A., July 12, 1913, p. 93.

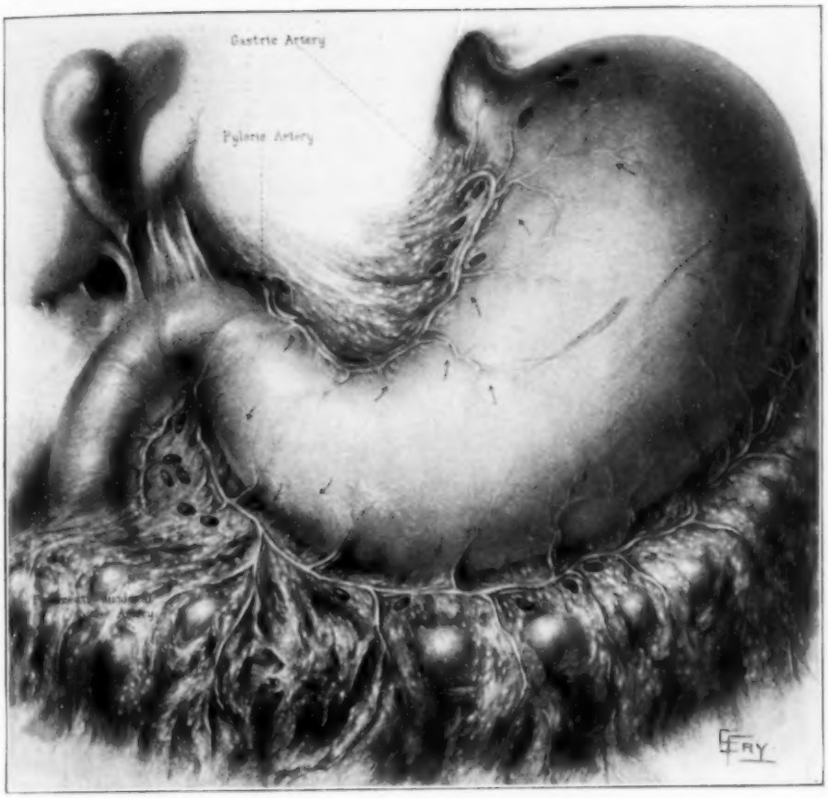

Fig. 1.—Distribution of the lymph-vessels of the stomach.

and cases was more than two years. This would indicate that in at least the majority of cases of cancer of the stomach, some lesion, ulcerous or otherwise, existed previous to the development of cancer—a point which has been disputed so far as cancer of the stomach is concerned, although accepted for all cancers on the surface of the body, where, so far as we know, cancer has never developed without a previous lesion. In an investigation by Wilson and MacCarty[6] of 218 cancers of the stomach removed by operation in our clinic, it was found that ulcer or some primary lesion of a similar character had existed in more than 50 per cent.

The art of the diagnostician lies in weighing the evidence at hand, and it is the rule that a correct diagnosis, if made at all, will be made on comparatively few signs and symptoms of definite value. The presence of tumor and obstruction, supplemented by roentgenoscopy and the examination of the contents of the stomach indicates the lines of investigation. The exploratory incision is the final test and on the diagnostician devolves the difficult task of determining which of the patients shall submit to such procedures. To give the patient a fair chance exploration must be done early.

Under present conditions the patient who is submitted to exploration with a probable diagnosis of cancer of the stomach has a little over one chance in three of a radical operation, a little less than one chance in three of a palliative operation and about one chance in three that the operation will be merely an exploration.

Every operation for cancer of the stomach should begin as an exploration. Exploratory operations for cancer of the stomach are not devoid of danger to the patient. In the 376 explorations in our series of one thousand in which nothing further was done, there were six (1.6 per cent.) deaths. In none of these cases, however, could the exploration be considered the direct cause of death. In most of the fatalities the disease was far advanced, a fact that we had failed to estimate correctly.

In cases of suspected cancer of the stomach it is the practice in our clinic to make a small incision

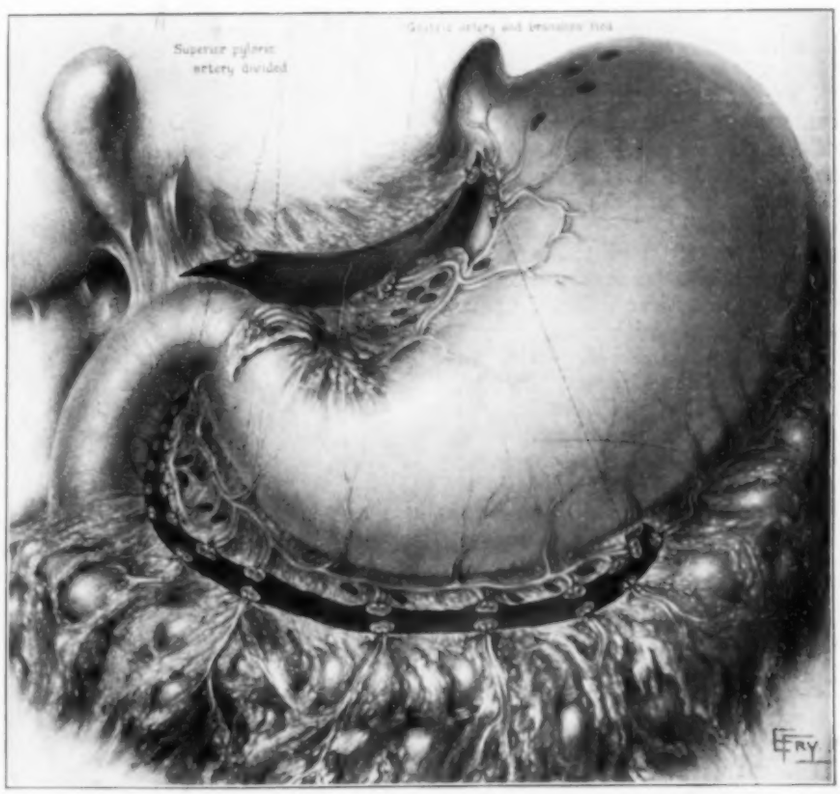

Fig. 2.—Carcinoma of the lesser curvature of the pyloric end of the stomach, with separation of the lymphatic groups. Dotted lines show proposed resection.

6. Wilson and MacCarty: Am. Jour. Med. Sc., December, 1909.

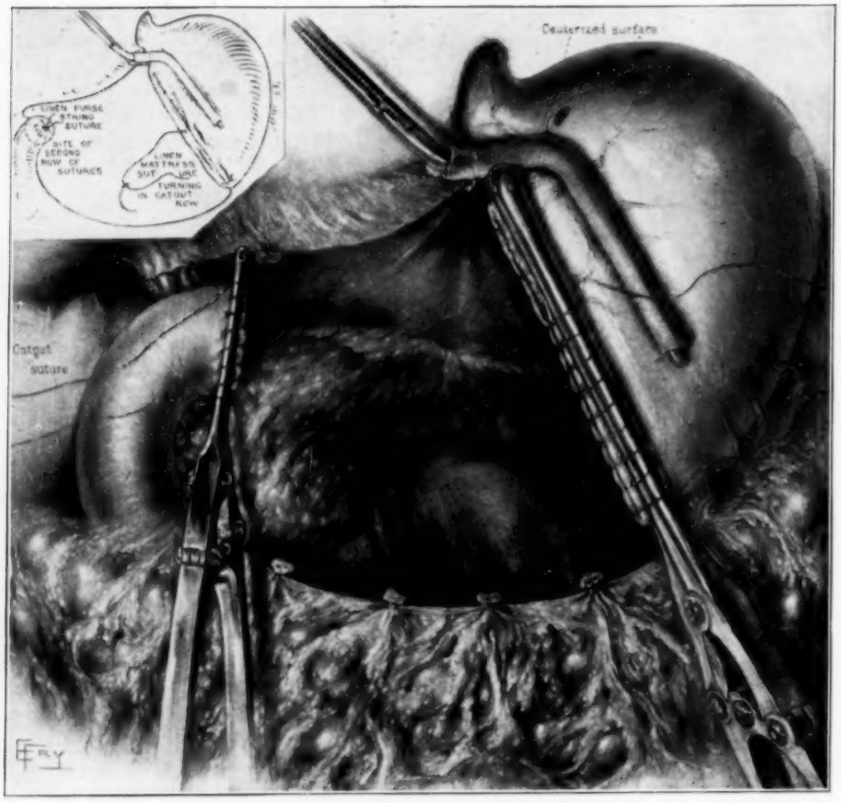

Fig. 3.—Method of closure of the ends of stomach and duodenum by continuous chromic catgut suture, to be followed by musculoperitoneal suture or linen (see small diagram).

in the epigastric midline, opening the peritoneum to the left of the suspensory ligament of the liver. The stomach and accessible portions of the liver are examined with two fingers. In a certain percentage of cases the hopeless nature of the condition will immediately be seen and the wound can be closed at once with buried sutures of linen or silk. This enables the patient soon to return to his family and friends. An exploration of this nature can be conducted under local anesthesia with novocain and the patient disturbed but little. In a large number of cases, however, such explorations are inadequate and the incision must be enlarged sufficiently to introduce the hand in order to make a more careful survey of the stomach, omenta, liver and peritoneal cavity. In such explorations the traction on the wound will ordinarily cause enough pain to make the use of ether advisable.

If, on exploration, a resection is deemed possible, the portion of the stomach containing the tumor is withdrawn from the abdominal cavity for further inspection. This examination will include the transverse colon and mesocolon. Occasionally the transverse mesocolon is involved in the arcade between the main branches of the middle colic vessels, and the portion involved can be removed without endangering the vascular integrity of the transverse colon. In a few instances in cases otherwise favorable for operation, the transverse colon was also involved and we then resected the diseased portion of the stomach with the involved transverse colon attached. One question rather difficult to decide is, what action to take when the disease in the stomach is mechanically removable, but infected lymph-nodes exist which are not removable. If such patients are in fair condition and the operation can be done without too great risk, we perform a resection. The resulting one or two years of comfortable existence for the patient seems to justify the action.

Moderate involvement of the pancreas does not necessarily preclude operation. Involvement of the pancreas has been considered a bar to resection of the stomach, but we have satisfactorily removed superficial portions of the pancreas in over 8 per cent. of our resections,

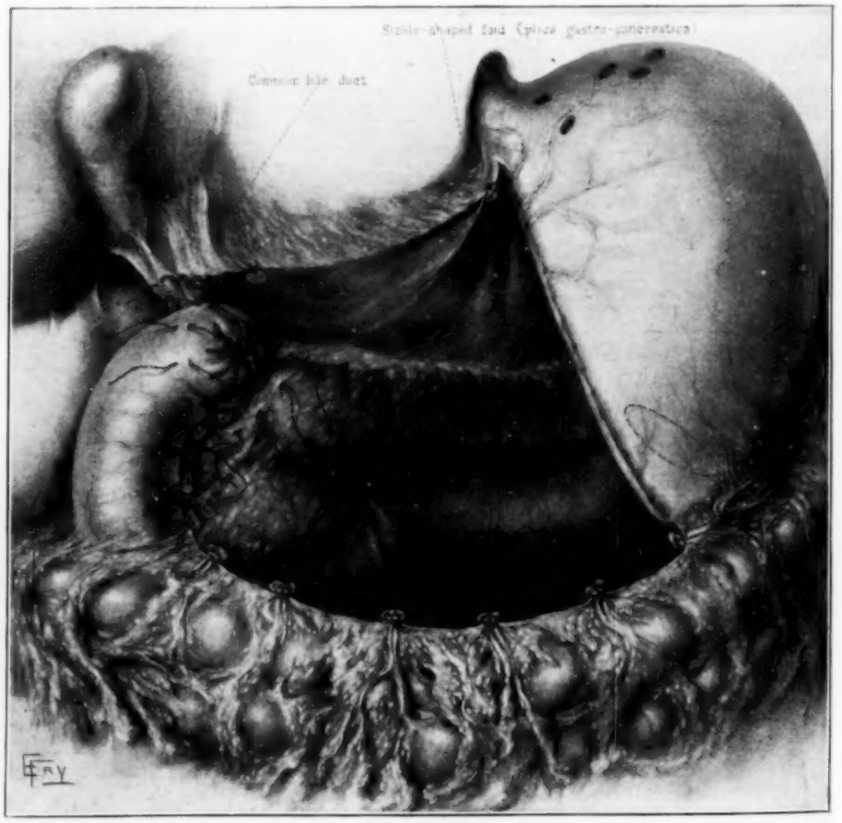

Fig. 4.—Interrupted sutures tying stump of duodenum to pancreas. Dotted lines show posterior gastro-enterostomy.

closing the end of the duodenum with purse-string sutures and implanting it into the excavation in the pancreas (Meyer[7]). Leakage has not occurred from either the pancreas or the duodenum, and altogether the technic has been most satisfactory. In our earlier work we were much concerned over the possible outcome of these procedures, since Haberkant[8] and Mikulicz[9] had shown a mortality of 70 per cent. or more in like cases. In reviewing our cases, however, we have not found that the mortality was increased more than 1 per cent. as a result of these complications.

Enlarged lymph-nodes will be found in a high percentage of cases of cancer of the stomach, but are not always malignant. The relative degree of involvement may be noted as follows:[10] (1) the group along the lesser curvature; (2) the inferior pyloric group; (3) the group along the greater curvature, and (4) the superior pyloric group. Early ligation of the four blood-vessels acts as a starting point for the separation of the lymph-nodes.

With some exceptions the restoration of the gastrointestinal tract can be best affected by the Billroth No. 2 method, that is, complete closure of the ends of the duodenum and stomach with an independent gastrojejunostomy, preferably by the posterior route. If the remaining pouch of the stomach be small, however, anterior gastro-enterostomy appears to answer the purpose equally well and is easier of performance.

In some cases of extreme malnutrition it may be advisable to do a gastrojejunostomy to be followed by a resection in two or three weeks, when the patient is in better condition. We have practiced this method occasionally, but, if the case is otherwise favorable, we prefer to make an immediate resection because it disposes of a foul, sloughing mass in the stomach, and the risk in doing the complete primary operation is little, if any, greater than in doing the operation in two stages. Palliative operations on the stomach are of some value but they should not be performed except for the relief of mechanical conditions, such as obstruction or, occasionally, when a differential diagnosis between ulcer and cancer cannot be established. In an occasional case perforation of an ulcer with adequate peritoneal protection occurs, but whether it is benign or malignant cannot be determined. If malignant, it cannot be removed, and the operation will be palliative; if benign, a cure results.

Gastrostomy is often a valuable operation in cancer obstructing the cardiac end of the stomach. It should be made with a No. 16 English catheter and preferably by the Witzel method. We performed this operation in a number of instances with a small catheter, about No. 8 or No. 9 English, fearing leakage, but we have gradually acquired confidence in the use of the larger size, which permits greater range of dietary. Pierce Gould[11] has called especial attention to the value of a No. 18 English catheter is gastrostomy.

In pyloric obstruction an anterior gastrojejunostomy after the method of Wölfler[12] and Hartmann[13] is the operation of choice since it can be accomplished with less manipulation than is necessary to reach the posterior wall of the stomach in order to perform the posterior operation. In our experience a vicious circle has not followed this plan, and the average mortality has been a little more than 4 per cent. We have had a somewhat higher mortality following the posterior gastrojejunostomy for malignant disease, evidently due to the increased manipulation.

Jejunostomy is occasionally a valuable method in cases of cancer of the stomach, especially in those high posterior perforations in which a radical operation is not possible. The involvement may be so high on the stomach that a gastrojejunostomy cannot be done on the proximal side, and in some cases it cannot even be determined whether or not the ulcer is benign or malignant. The jejunostomy is usually made from about 12 to 16 inches down from the origin of the jejunum by the Witzel method and using a No. 12 English catheter. We have had no leakage in these cases, nor has the attachment of the jejunum to the abdominal wall been a cause of later trouble. Jejunostomy, in cases of either ulcer or cancer, affords adequate feeding and gives complete rest to the involved stomach. If the condition be ulcer, the improvement in nutrition is almost as valuable as rest in stimulating the healing process. A rapid gain in weight and strength is the rule in these cases. The operation is also of great value in cases of accidental injury during the exploration of a cancerous stomach in which resection cannot be done.

CONCLUSION

It may be said that with our present means of diagnosis, cancer of the pyloric end of the stomach can be recognized sufficiently early to perform the radical operation in at least half the cases. The mortality is about 10 per cent., depending largely on the class of cases accepted for operation. If an early diagnosis has been made and the patient is in good condition, the mortality will be less than 5 per cent. There is a prospect of a five-year cure in about 25 per cent., and of a three-year cure in 38 per cent., in the case of those who recover from the operation. Comparatively few patients who recover following resection fail to get more than one year of relief.

ABSTRACT OF DISCUSSION

DR. WILLIAM L. RODMAN, Philadelphia: There are forty thousand deaths from cancer in the United States every year, and, if we accept the statement of that conservative pathologist, Virchow, even a larger percentage than Dr. Mayo gave to-day, 35 per cent., die from cancer of the stomach.

There are several points which, I think, ought to be made clear in connection with cancer of the stomach. It is frequently impossible to make a positive diagnosis at such time as to warrant a radical operation from symptoms alone, but nearly always there will be enough symptoms to warrant an exploratory operation. My judgment is that in a disease which is so common and so fatal, and which so quickly passes the operable stage, more frequent exploratory laparotomies are necessary and should be demanded. The symptoms of cancer are vague, indefinite and widely variant, depending much on its location. At the cardia they may be pronounced early; at the pylorus, the more usual site, they are usually late and due to obstruction. The surgeon should, moreover, be held accountable for the proper surgical procedure. Palliative operations are of questionable utility. Encouraging as it is to have Dr. Mayo tell us that in 38 per cent. of his operations there has been a three-years' cure and in 25 per cent. a five-years' cure, could we not do a great deal better if we operated during the precancerous stage or when the lesion is still benign, or simple ulcer? Not only do we find cancer engrafted on ulcer in more than 50 per cent. of the cases at the Rochester clinic, but Mayo Robson finds it also in 59 per

7. Meyer: Tr. Am. Surg. Assn., xxviii, 1910, p. 329.
8. Haberkant: Quoted by Paterson: The Surgery of the Stomach, p. 43.
9. Mikulicz: Tr. Cong. Am. Phys. and Surg., 1903, vi, 55.
10. MacCarty, W. C., and Blackford, J. M.: Involvement of Regional Lymph-Nodes in Carcinoma of Stomach, Ann. Surg., June, 1912, p. 811.
11. Gould, A. P.: Treatment of Inoperable Cancer, Lancet, London, Jan. 25, 1913, p. 215.
12. Wölfler: Centralbl. f. Chir., 1881, No. 45.
13. Hartmann: Arch. gén. de méd., 1900, iii, 562.

cent. of his cases, Moynihan in 72 per cent. and a Russian authority, Shaperko, in 90 per cent. Many of the French surgeons assert that every case of cancer is necessarily preceded by ulcer. Why is it not better, therefore, to excise all ulcers of the stomach, or at least those which are hard and callous and situated in the pyloric region and which constitute about 80 per cent. of cancers of the stomach. We cannot escape the conclusion that there must be a close etiologic connection between benign and malignant ulceration of the stomach, and that the time to cure cancer is when it is still a simple ulcer. This can be done with a very small mortality. I believe, and have believed for many years, that we shall live to see the time when all ulcers that are not bound down by prohibitive adhesions to the pancreas, gall-bladder, the large intestine, etc., will be promptly excised. I have followed this practice for the last thirteen years.

DR. JOHN B. DEAVER, Philadelphia: As Dr. Mayo's statistics show, cancer of the stomach is a curable disease if taken in the curable stage. Dr. Mayo has shown that there is practically no mortality (0.6 of 1 per cent.) in an exploratory operation. This is a strong argument and one that should appeal to us. To perform an exploratory operation is practically taking no risk at all and, as Dr. Mayo also said, it is the final test. I was glad to hear Dr. Mayo's statement that roentgenoscopy has been of service in aiding early diagnosis and in showing the extent of the disease in certain cases.

DR. JOHN A. LYONS, Chicago: I wish to add to the discussion this much: I sent a friend of mine to Rochester about two months ago for the removal of a cancer. The abdomen was opened, and it was discovered by Dr. Mayo that there was no cancer, but an ulcerated condition of the stomach. Dr. Mayo informed my friend that in six weeks he would be as well as ever. Cancer of the stomach had been the diagnosis of several surgeons in Chicago. The patient of whom I speak had lost 46 pounds and he is well to-day and has a fair prospect of living many years.

DR. W. J. MAYO, Rochester, Minn.: I think we all occasionally make the mistake in certain cases of treating as ulcer a lesion which afterward proves to be cancer. It is difficult to determine, by the ordinary methods of diagnosis during operation, whether a certain gastric ulcer is benign or malignant. Unless we can procure a piece of tissue for diagnosis we must be guarded in our statements. The opposite mistake also occurs. In our clinic several patients on whom palliative operations were done for supposed hopeless gastric cancer remained well for more than five years. The operations were done for the relief of obstruction. We cannot, therefore, blame the medical man for not always making a diagnosis of cancer of the stomach, as he must employ indirect methods when we sometimes fail with direct ones. In the examination of these patients one should keep at least four things in mind: First, is there a tumor and is it movable? Repeated examinations should be made if in doubt; second, food remnants in the gastric content; third, Roentgen-ray bismuth photographs; fourth, examination of test-meal, etc.

EXPERIMENTAL TRANSPLANTATION OF INTESTINE AFTER EXTENSIVE EXCISION OF THE SIGMOID*

J. SHELTON HORSLEY, M.D.
RICHMOND, VA.

This subject was suggested to me by a case that came under my care about five years ago. The patient was a colored man, a deaf mute, who had been suffering from obstruction of the bowels for several days before admission to the hospital. He was enormously distended and his condition was desperate. Operation was done under cocain and a volvulus of the sigmoid found. The sigmoid was twisted and so distended that it resembled a large cyst. The volvulus was excised and after removing the diseased bowel it was impossible to approximate the lower end of the large intestine to the small portion of the descending colon that was left. An artificial anus was formed. The patient recovered and left the hospital about four weeks after the operation. He was very ignorant and could not properly take care of himself. His condition was pitiful in the extreme.

The necessity for excision of the sigmoid occurs not infrequently. Sometimes it should be so extensive that the ends of the bowel cannot be united. The chief conditions that render this necessary are volvulus, ulcers, or malignant tumors. The sigmoid may be secondarily involved by growths of the ovary or uterus so that its excision is necessary either from extension of the growth or from interference with the nutrition of the sigmoid. Sometimes it is so entangled in inflammatory products, or affected by benign ulcers, tuberculous or dysenteric, that extensive excision is advisable. In a few cases of dysentery in which absolute rest is indicated for the ascending and transverse colon and excision demanded for the sigmoid, an operation which would accomplish this and at the same time do away with the necessity of an artificial anus would be desirable.

Bearing these points in mind, I have been working experimentally on the problem. All the experiments have been done on dogs and the operations have been performed under full ether anesthesia. Every precaution was taken to prevent pain and suffering to the animal, and no more experiments were done than seemed necessary to prove the point in question.

In the first experiment, part of the sigmoid was excised and a section of the ileum four and a half inches long was transplanted. According to some previous experiments[1] it seems proved that if as much as 4½ inches of the small intestine be devascularized entirely and the omentum wrapped around it, nutrition will be maintained. So this amount of the ileum was removed and transplanted where a portion of the sigmoid had been excised. The segment was surrounded by omentum which was held in position by a few silk sutures. The dog died in twenty-four hours, and postmortem showed that the transplanted segment was completely gangrenous. The technic was then varied so that about four inches of the ileum was resected leaving its mesentery attached. The ileum was reunited and its resected portion transplanted to take the place of the excised sigmoid. After the suturing was done, the mesentery of the transplanted section of the ileum was cut and the segment surrounded by omentum. The dog lived nine days. Postmortem showed that while most of the transplanted bowel had lived there were perforations in several places and general peritonitis. The ileum was next transplanted in the manner just indicated except that its attached mesentery was left intact. About 2 inches of ileum were transplanted. This dog died in four days and the condition of the intestine was quite similar to that found in the second experiment.

From these experiments it seemed that the transplantation of a segment of small intestine to take the place of a defect in the sigmoid was not satisfactory because the ileum, being smaller in diameter than the sigmoid and not prepared to resist the impact of the hard, dry, fecal masses gave way under the new conditions, ulcerated and perforated. In order to overcome this, it would

* Read in the Section on Obstetrics, Gynecology and Abdominal Surgery of the American Medical Association, at the Sixty-Fourth Annual Session, held at Minneapolis, June, 1913.

1. Horsley, J. S.: THE JOURNAL A. M. A., Aug. 12, 1912, p. 597; and Ann. Surg., April, 1913.

be necessary to deliver the fluid fecal contents directly into the distal end of the excised sigmoid. This was accomplished in nine experiments in the following manner: The ileum was cut across at the ileocecal valve and transplanted into the distal end left after excising the sigmoid. The end of the descending colon, or upper stump from the excised sigmoid, was then drained by a lateral anastomosis into the ileum. (Fig. 1.) The advantages of this operation are apparent. The fluid fecal contents are delivered directly into the lower stump of the sigmoid without any undue friction on the transplanted ileum. The remaining portion of the large bowel has its secretions drained into the ileum and at the same time acts as a reservoir. If the fecal current is delivered too rapidly, the bowel can hold some excess feces and so prevent the chronic diarrhea which is frequent and often serious after total excision of the large bowel. Excision of the cecum, ascending and transverse colon, or the necessity for draining them by an external opening is obviated by this operation. The procedure is comparatively simple—merely cutting across the ileum, transplanting it to the sigmoid end-to-end and then a lateral anastomosis of the end of the large bowel to the ileum higher up. This can be done quickly when compared with such prolonged operations as total excision of the large bowel, is less dangerous, and, on the other hand, does not require an artificial anus, or any secondary operation as would be the case if the large bowel were drained externally.

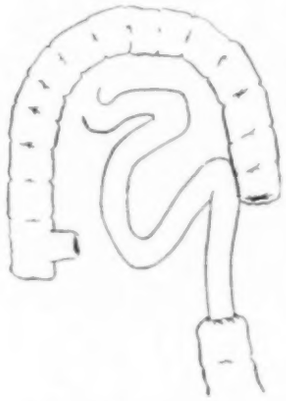

Fig. 1.—The sigmoid has been resected. The upper stump has been closed by invagination, the ileum cut across near the ileocecal valve, and its distal end closed by invagination. The ileum has been sutured to the distal portion of the sigmoid end-to-end and the descending colon is drained into the ileum by a lateral anastomosis. In this way, the defect left by excising the sigmoid is bridged over by transplanting the ileum, and the secretions from the large bowel are drained into the ileum.

Of the nine dogs operated on, six survived and were killed by chloroform, 84, 68, 48, 50, 47 and 54 days, respectively, after the operation. The openings were satisfactory and the intestine was well nourished in each case. Adhesions were always present though there was no evidence of obstruction. In one specimen there was a small abscess near the stump of the descending colon; this stump had been simply ligated without invagination. In two dogs of the series, the bowel ends were sutured and invaginated as described below; both the specimens were satisfactory though there were some adhesions. Of the three deaths, one occurred from perforation of the ileum just opposite the site of the lateral anastomosis by a large piece of bone sixty-one days after operation. The bone was jagged and caught in the lateral opening and was held firmly, a sharp spicule perforating the ileum. Both of the other fatal cases were due to leakage at the stump where simple ligature without invagination was used. One dog did not die till forty-three days after operation. An abscess had probably formed at the stump of the colon and been localized for some time before rupturing. Post-mortem showed leakage at the stump of the colon with general suppurative peritonitis. The third dog died two days after operation. Post-mortem showed leakage at the stumps of colon and ileum, and peritonitis

The steps of the operation in order are: excision of the sigmoid, closure of its proximal stump, division of the ileum about 2 inches from the ileocecal valve, closure of its distal stump, union of the ileum to the lower end of the sigmoid, and lateral anastomosis between the ileum and descending or transverse colon. The details of these steps are important and will be discussed fully. Let us first consider the technic of closing the bowel ends. This is done at the end of the descending colon and at the distal stump of the ileum. I first tried Lilienthal's method of simply ligating firmly the bowel ends just as in ligating the pedicle of a tumor. This is quick and simple and works nicely in appendectomy. In the experiments, it was found that two of the seven dogs in which the ends were merely ligated, died from leakage at the stump of either the ileum or colon. This seems due to the fact that although the ligatures may be tied tightly the muscular coat is so thick and heavy the ligature gradually cuts and becomes loose. The powerful peristalsis of the dog's bowel also tends to loosen the ligature. In the dog a simple ligature of the bowel end is unsafe. The method of closing the bowel ends that was found satisfactory was to place a stout overhand suture in the margins of bowel ends, going

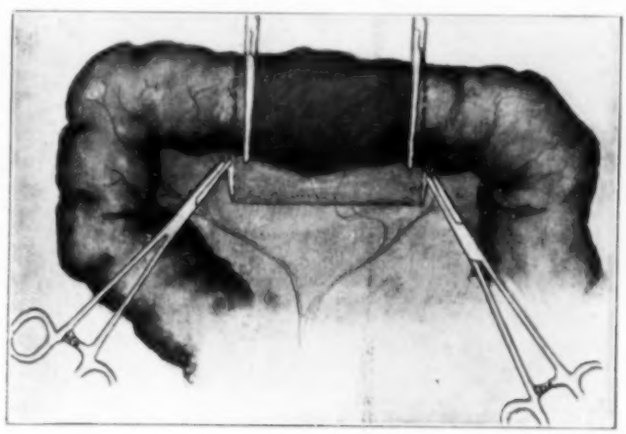

Fig. 2.—Before the bowel is divided, its mesentery is cut close to the bowel wall and the triangular space, caused by separation of the layers of the mesentery just before they cover the bowel, is clamped with a hemostat and ligated with silk or linen. This area is composed of areolar tissue rich in blood-vessels and lymphatics which absorb quickly, and even though it is closed off after it has been inoculated, the germs are merely sealed in and are likely to cause breaking down of the union at this point later on. The procedure indicated in the cut obviates this and also brings together the peritoneum at this point.

through both walls at the same time. No deeper bite should be taken than is necessary for a secure hold and the stitches should not be too close together. The ends of the suture are then tied tightly together, making only one knot. The ends of the suture may be caught with a hemostat and used to steady the bowel while inserting a purse-string suture, or the purse-string may be placed at what is thought to be the proper place before the bowel is divided. The purse-string suture should be placed not more than half an inch from the end of the bowel, for if placed farther away invagination is more difficult. After invagination of the bowel ends and tying the purse-string suture, the next step is the union of the ileum to the lower end of the sigmoid.

Because of the short end of the sigmoid that would be left after a wide excision, the union here is best done end-to-end, and not laterally. As fluid feces will be delivered by the ileum directly at the point of union, there seems no reason why the end-to-end union should

not be made as in the small bowel, though for additional safety in man a rubber tube might be placed from the anus to the point of union and fastened in place for a few days by a catgut suture. The method of end-to-end union that has proved satisfactory in all these cases is one that I have been using for more than eight years. Before the bowel is divided, the mesentery is cut close to the bowel wall, and the triangular area where the mesentery separates is grasped with a hemostat and ligated with silk or linen (Fig. 2.) The objection chiefly urged against end-to-end union of bowel is that

Fig. 3.—The first stitch starts in the end of the bowel at the operator's right hand about one-third of an inch from the mesenteric border. It is a mattress stitch and penetrates the wall of the right bowel from within out. The needle is then carried across to the left end of the bowel and penetrates all coats, entering on the peritoneal surface and emerging from the mucosa. It comes back in the reverse direction, entering the mucosa and emerging on the peritoneal surface, then enters on the peritoneal surface of the right bowel and emerges on the mucosa. The thread is tied, leaving an end about four inches long which is grasped in hemostatic forceps. The needle is then passed back and forth through all coats of the bowel, suturing away from the operator, and making a continuous mattress stitch. After about one-third of the circumference has been sutured, the needle emerges from the lumen of the right end of the bowel and is then thrust through all walls of the right end from within out, appearing on the peritoneal surface of the right end. The stitch is then continued as a right-angled suture penetrating all coats of the bowel.

healing is difficult at the mesentery border and the cause of non-union is ascribed to lack of peritoneum. This may be true, but it is probable that infection of this area is also the cause of many failures. It is the usual practice to divide the bowel from the free border to the mesenteric border and the knife or scissors that cuts the septic mucosa also cuts through this triangular area, which is areolar tissue rich in blood-vessels and lymphatics. After this area is inoculated in this manner, it is the usual practice to close it, thereby sealing in bacteria that are likely to cause infection and non-union later at this point. By adopting the step mentioned above, this area is covered with peritoneum and, what is more important, its blood-vessels and lymphatics are closed before the septic bowel is opened. The bowel is then divided and its ends cleaned with moist antiseptic gauze. The first stitch begins in the end of the bowel at the operator's right-hand, about one-third of an inch from the mesenteric border. It is a mattress stitch and starts from the mucosa of the right bowel penetrating all coats. Then the needle is carried across to the left end of the bowel and penetrates all coats, entering on the peritoneal surface and emerging from the mucosa. It comes back in the reverse direction, entering the mucosa of the left bowel end and emerging on the peritoneal surface, then enters the peritoneal surface of the right bowel emerging from the mucosa. The thread is tied leaving an end about four inches long which is clamped with a light hemostatic forceps. The needle is then passed back and forth through all coats of the bowel, suturing away from the operator, making a continuous mattress stitch. Care must be taken to include a portion of the mesentery that has been tied, else it will slip back and will not be included in the suture. Each suture here must be very snugly approximated. After about one-third of the circumference of the bowel has been sutured, the needle emerges from the lumen of the right end of the bowel, and is thrust through all walls of the right end, appearing on the peritoneal surface (Fig. 3). The stitch is continued as a right-angle stitch penetrating all coats (Fig. 4). Snug approximation should be made with each stitch and at about every fourth stitch a back-stitch should be taken in order to prevent the thread from drawing too tightly and so diminishing unduly the caliber of the bowel. This is done by taking two stitches on the same side, the last one being slightly farther back than the preceding stitch. In this manner it is impossible to draw the thread too tightly. It is very important to have the first third of the suture line that unites the mesenteric border drawn tightly, but after this unless the back-stitch is taken at intervals, pulling the thread may diminish the lumen so much as to produce obstruction.

The suture is continued toward the operator and is carried a short distance, about a stitch, beyond the lowest point where the original thread left when the knot was tied comes out. This last stitch should be taken in the left-hand side of the bowel. The thread is then tied firmly to the original end that is grasped in the hemostat. The knot should be tied parallel to the line of suturing so as to sink in easily and

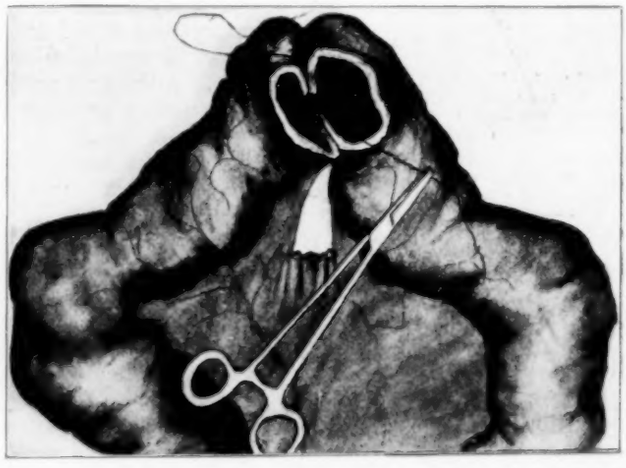

Fig. 4.—The suture is continued, inverting the bowel edge as it goes. A back-stitch should be taken at every fourth stitch. This is done by taking two stitches on the same side, the last one being slightly further back than the preceding stitch. This makes it impossible to draw the threads so tightly as to cause puckering and too great diminution of the lumen of the bowel.

should be tied quite snugly. If a back-stitch has been taken at proper intervals, there is no danger of reducing the lumen by tying this knot too tightly. It had best be tied three times and then cut short; the ends will disappear within the bowel.

This method is simple, leaves all knots within the bowel, and I have never seen a leakage from it when

it was properly used. The danger of obstruction to the lumen is obviated by putting in occasional backstitches and by properly approximating each stitch as it is made. The thread is all practically buried, leaving almost no thread exposed on the peritoneal surface, and the whole suturing can be done very quickly. All of these features are important and particularly so after a rather extensive operation such as transplantation of the bowel after resection of the sigmoid.

The next step to be considered is the draining of the large bowel. This is best done by a lateral anastomosis between the end of the descending colon and the ileum at such a point above its junction with the lower portion of the sigmoid as to provide against any undue tension. The lateral anastomosis can be used according to the technic of a gastro-enterostomy. A rubber-covered clamp is placed across the colon about four inches above its stump and another similar clamp grasps the ileum laterally. The union is made as close to the end of the colon as possible. After thoroughly packing off the surrounding structures, one stitch of silk or linen is taken at the upper portion of the proposed lines of incision into the intestines and the suture tied and left long. This fixes the ileum and colon together. An incision is then made into each and the bowel cleaned out with moist, antiseptic gauze. The bleeding points, if spurting, are clamped and tied taking a small bite of tissue. The bowel is united by a continuation of the first stitch which is applied quite snugly and each stitch locked as in the button-hole stitch. When the lower end of the incision is reached, the suture is converted into right-angled stitch penetrating all coats, and about every other stitch is locked after the manner of the button-hole stitch. The end is then tied to the original end which was left long and grasped with the forceps.

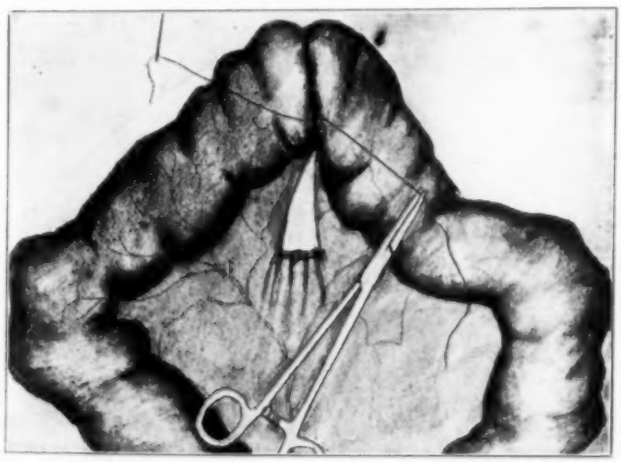

Fig. 5.—The suturing has been completed, the last stitch being taken in the left end of the bowel slightly beyond the lowest point where the original end of the thread comes out. The knot should be snug and should be tied parallel to the line of sutures so that it will sink in easily. The ends should be cut short and will sink into the lumen.

This suture has always been satisfactory, it is practically buried throughout its course, and it saves an apparently unnecessary second suture. It is done with a curved needle. One row seems all that is necessary here and makes less flattening of the bowel. If the operator prefers, however, there is no serious objection to following the identical technic of a gastro-enterostomy and using two rows of sutures.

ABSTRACT OF DISCUSSION

DR. C. E. RUTH, Des Moines, Iowa: The function of the large intestine is to absorb a large portion of the solid matter. To overcome the difficulty which may be caused by the small intestine carrying the fecal current of the colon it may be necessary to make the anastomosis in the side of the colon. In intestinal anastomosis one point of danger is due to the divergence of the mesentery, and the next point of greatest weakness is that most distant, because of the lessened blood-supply. Another thing that should be kept in mind is that in the union of these two points with an angulation like that when the end-to-end anastomosis is made, there is not the slightest risk of contraction of the lumen of the intestine, but you can make the angle greater. The tendency is to a lesser degree of caliber rather than to a greater when an end-to-end anastomosis is made.

DR. A. GOLDSPOHN, Chicago: One feature in technic in favor of side-to-side anastomosis is that an aseptic field for work is preserved to the last moment, when the second intestinal lumen must be opened, because both ends of the bowel first cut in two have been turned in and closed. When the first bowel is severed with a cautery, however, as mentioned by Dr. Horsley, the same advantage can be secured for an end-to-side anastomosis by cutting off the eschar from the used end of the first bowel finally at the same time that the lateral incision is made into the second bowel involved—both being done after the posterior row of seroserous stitches has been placed. I had occasion to do this recently in an ileo-sigmoid anastomosis in a young woman who had an extreme elongation and descensus of the transverse colon, after three previous abdominal sections. The amount of digestive disorder (sometimes accompanied with much pain) experienced in that case for about eight weeks after this exclusion of the large bowel suggests careful deliberation before taking this step. The technic of circular enterorrhaphy—which Dr. Horsley describes and which he has published before, I have found to be practical and more simple than that of Dr. Connell.

DR. J. S. HORSLEY, Richmond, Va.: It is true that some fecal matter accumulates in the large bowel, but not a large amount, and even that amount is to some extent obliterated by the constant flow of liquid feces. The part that does become hard is softened by the constant flow of liquid feces and peristalsis is carried on. The point is well taken. The description was merely diagrammatic.

THE HEALING PROCESS OF OSTEOSARCOMA UNDER THE INFLUENCE OF THE ROENTGEN RAYS*

GEORGE E. PFAHLER, M.D.
PHILADELPHIA

The healing process of osteosarcoma is very similar to that observed in the healing of any other bone disease, and consists of a bone sclerosis. This is indicated by a progressive deposit of lime salts in the tumor area. This process continues over a period of from several months to a year or more, and progresses long after the roentgenotherapy has been discontinued. The deposit of lime salts does not depend, therefore, on stimulation by the Roentgen rays, but is simply Nature's method of replacing the tumor tissue which has been destroyed by their action.

* Read in the Section on Pharmacology and Therapeutics of the American Medical Association, at the Sixty-Fourth Annual Session, held at Minneapolis, June, 1913.

* The subject originally announced was "Good Results Obtained in the Treatment of Sarcoma," but I found that this subject would make my paper too long, so I have limited myself to this one group of sarcomas. Owing to lack of space this article is here abbreviated by the omission of four case reports which are included in the Transactions of the Section and the author's reprints.

It is well known that the rays cause a granular degeneration of tumor-cells before affecting the surrounding healthy tissue-cells, probably because of their lower degree of vitality or resistance. This effect is due to the chemical action of the rays absorbed, just as these rays show their chemical action on the silver salts on photographic plates, on the glass of a Roentgen-ray tube and on the lead-glass shields which are used around the Roentgen-ray tubes for protection. These chemical effects can be observed any day, in any Roentgen-ray laboratory. If such chemical changes will take place in inorganic materials, and especially in such a stable product as glass, on which most of our strongest chemicals have no effect, it is not strange that a most decided chemical effect should be observed in tumor-cells, which are organic and less well organized and therefore less stable than the healthy tissues of the body.

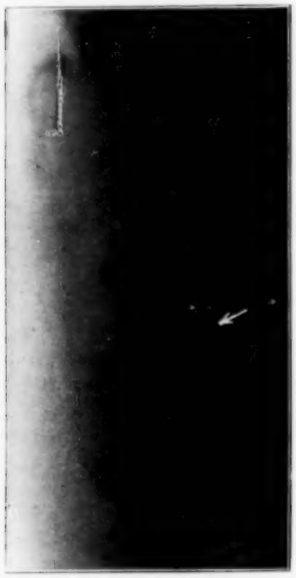

Fig. 1, Case 1.—Absence of lime salts in sarcoma area is shown. Dark arrow points to the area from which a section was removed March 3, 1906. (Plate reversed by printer.)

Fig. 2, Case 1.—Notice beginning calcification under the periosteum or periphery; also slight contraction of the tumor area at the end of a month (April 7, 1906).

The good effects of the Roentgen rays on sarcoma, according to my observations, have been more marked in osteosarcoma than in sarcoma involving other tissues of the body; and of the osteosarcomas, the medullary or central type responds best. Remarkable results, however, are often obtained in sarcoma of the soft tissues. When one realizes that all chemical and biologic effects of the rays depend almost entirely on those which are absorbed and not on those which pass through, it will not be surprising that the most marked effect should be observed in bone tumors, since it is a well-known fact that the bones absorb many times more rays than any other tissues of the body. This is seen clearly in every roentgenogram. In fact, the bones absorb all of the soft, and most of the hard, rays. Therefore, we can use rays that will easily pass through the soft tissues and in them produce little or no effect (because they are not absorbed), while a most marked effect will be produced on the bone tumor because they are absorbed. A secondary effect of the rays is that due to the secondary radiations, which is similar to that produced by the primary radiations. The quantity of secondary radiations given off from any element corresponds roughly to the density of the element. Therefore, since bone is more dense than any other tissue of the body, even the secondary radiations and their effect will be greater than in the soft tissues. I have discussed this phase of the subject because many might be surprised and incredulous, on account of the popular medical opinion that the rays are useful therapeutically only in superficial affections.

The diagnosis of osteosarcoma can be made, and the healing process can, fortunately, be beautifully observed by means of the Roentgen rays. This is especially true in the study of the long bones. The characteristic pathologic appearance of osteosarcoma is when briefly expressed, a decalcification without sclerosis, but associated with new growth. If the tumor is a central sarcoma of a long bone, it is seen to have destroyed the cancellous structure locally, and this appearance is gradually shaded into the healthy bone-tissue. The total diameter of the bone is likely to be increased, and, if advanced, the wall of the bone will be seen to have broken through and the soft tissues to have become involved. If it is a peripheral sarcoma, the tumor-tissue which early infiltrate the soft tissues will be seen to lift the periosteum in a spindle form, and may have infiltrated only the surface of the bone.

All of these cases that I have studied and treated belong to the central or mixed type. In the healing process there is a gradual increase in the amount of lime salts, and this deposit seems to proceed from the periosteum. When the treatment is successful, the entire tumor area becomes infiltrated with lime salts, until it is as dense as normal bone. The size of the tumor area is usually somewhat reduced, but I believe never returns to normal. In one case (No. 3) there seemed to be no reduction in the size of the tumor, but with the increase of lime salts in the tumor area the patient's symptoms disappeared.

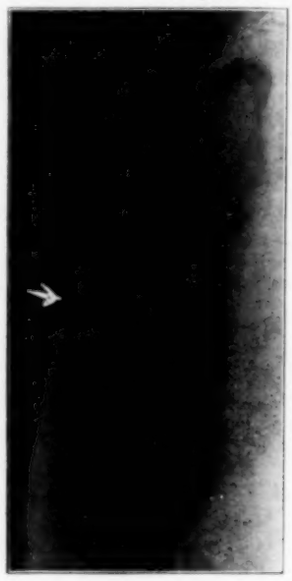

Fig. 3, Case 1.—Notice increase in the calcification at the end of the second month of treatment (May 3, 1906).

Fig. 4, Case 1.—Notice complete calcification at the end of six years (April 5, 1912). (Plate reversed by printer.)

The cancellous structure never attains a normal appearance, but presents a collection of lines without definite order. This sclerotic area is then more dense than normal bone. I have found that these areas continue to become more dense for a considerable time after the roentgenotherapy has been discontinued, but that they attain approximately normal density within a year.

Fig. 5, Case 3.—Osteosarcoma of pubes and ischium. Shows the disease in the bone and the tumor extending 6 inches down the thigh, which is only slightly more dense than the soft tissues (Feb. 12, 1912).

It has been my privilege to study a number of cases of osteosarcoma by means of serial roentgenograms made during the course of treatment and from one to seven years afterward. These cases are reported not in the order of occurrence, but more particularly in the order in which they are most instructive, and chiefly with reference to the locality involved.

REPORT AND DISCUSSION OF CASES

CASE 1 (Figs. 1, 2, 3 and 4).—Miss L. B., aged 18, was referred to me by Dr. M. P. Warmuth, March 5, 1906. She had bruised the upper portion of the left leg ten months previously, and on this area a painful tumor developed. Feb. 20, 1906, a roentgenoscopy showed the upper 9 cm. of the fibula swollen to a diameter of 3 cm., or three times the diameter of the normal shaft of the bone. This diseased portion apparently contained no lime salts. It showed no medullary cavity, but in the upper portion could be seen a cavity about 1.5 by 1 cm., which was produced by the removal of a section for microscopic examination. Otherwise the tumor was uniform in consistency and showed only slightly more density than muscle. The diagnosis of osteosarcoma was made. Microscopic examination in the pathologic laboratory of the Medico-Chirurgical Hospital showed the tumor to be a round-cell sarcoma.

Amputation at the middle of the thigh was advised, but was refused. Roentgenotherapy was then advised and begun March 5, 1906. The patient was treated six times a week for six weeks; then three times a week for three weeks. In all she was given forty-seven treatments in three months. She has not been treated since then and is still perfectly well, seven years afterward.

A series of roentgenograms were made Feb. 20, April 7 and May 3, 1906, and Aug. 8, 1907, April 27, 1908, and April 5, 1912. These studies show a progressive increase in the quantity of lime salts, beginning first by a deposit beneath the periosteum covering the tumor, or at least at its periphery, and gradually extending into the center, so that at the time of stopping treatment the bony periphery was about ⅛ inch thick. At the end of fourteen months the tumor had approximately the density of the normal bone, but showed a number of elongated small cavities, which probably replaced the medullary cavity. It was then reduced to about two-thirds of its original size. Since that time there has been no appreciable change.

This case shows the following interesting points: 1. The clinical, roentgenologic and microscopic diagnosis was of sarcoma. 2. It was clearly an osteosarcoma of the medullary type. 3. The healing under the influence of the Roentgen rays began at the periphery and was indicated by a gradually increased deposit of lime salts, until it had reached the density of normal bone. 5. The tumor was only reduced to two-thirds of its original size. 6. The patient has remained well over seven years, during which time she has been married and has followed the ordinary affairs of life.

CASE 2.—Miss M. S., aged 23, was referred to me by Dr. Albert Cole of Indianapolis, March 29, 1909. Her right leg had been lame, stiff and painful since May, 1908. At the time of my examination by means of the Roentgen rays, she had a medullary or central sarcoma involving the upper

Fig. 6, Case 3.—Nearly complete calcification of the tumor (June 14, 1912).

2½ inches of the fibula. The tumor was about four times the diameter of the fibula and showed no evidence of lime salts, except the faintest trace on one side. To all appearances the tumor seemed to be a duplicate of that in Case 1 except that it was more advanced. The patient refused operation absolutely.

She was treated with the Roentgen rays at intervals during a year, receiving about ninety exposures. There was

slight increase in the lime deposit, but at no time definite evidence of reorganization. In May, 1910, the patient returned with definite evidence of fluctuation. She consented to have this incised and drained under promise that the leg would not be amputated. Incision showed an abundance of creamy pus, and Dr. Laplace, who operated, believed that it was tuberculous. The wound was curetted. Some of the scrapings were sent to Dr. Henry S. Wieder for microscopic study. He found the growth to be a spindle-cell and giant-cell sarcoma. Following the operation the patient developed some fever, and there was a continuous discharge of pus from the wound.

Fig. 7. Case 4.—Osteosarcoma of ilium. Notice fracture of the tumor (Jan. 6, 1909).

Repeated roentgenoscopies after the curettement showed a progressive deposit of lime salts, but little tendency for the wound to heal. The general appearance now was that of an osteomyelitis. Eight months after the curettement, Dr. R. F. Morris of Houston, Tex., wrote that the ulcer looked malignant, and had the appearance of an epithelioma. The patient then consented to an amputation of the leg and has remained quite well the two years since. The pathologic diagnosis by Dr. E. F. Cook was "myeloid sarcoma."

The points of interest in this case are: 1. The location and type of the osteosarcoma were almost duplicates of those in Case 1. 2. It was farther advanced, and probably did not have enough of the periosteum left to effect the deposit of lime salts. 3. The tumor degenerated into what seemed to be pus (a condition observed in another case of sarcoma of the soft tissues of the neck, which proved to be sarcoma). 4. The treatment probably helped to limit the disease since there has never been any evidence of metastasis in five years.

CASE 3 (Figs 5 and 6).—Mr. J. B., aged 39, was referred to me by Dr. John B. Deaver, Feb 13, 1912, who stated, "I am morally sure that the growth is sarcoma and inoperable." The patient had at this time a growth infiltrating the anterior portion of the left thigh, about 6 inches long and 3 inches wide. He hobbled along with a cane, placing little or no weight on this leg.

Roentgenoscopy showed disease of the entire os innominatum below the middle of the acetabular cavity, or corresponding approximately with the ischium and pubes, and a bony tumor extending 6 inches down the thigh. The lime salts were almost completely absorbed in the diseased area, and the cancellous structure was entirely disorganized. The case looked like a hopeless one.

Roentgenotherapy was begun Feb. 15, 1912, and repeated daily at first, then three times a week, the patient receiving seventy-five exposures in all, during a year. He showed improvement at the end of three weeks, and in two months he was able to climb off and on a wagon and walked with only a slight limp. During the past fourteen months he has been driving a wagon regularly and now walks without the slightest limp, pain or inconvenience. To all appearances he is well. He has had repeated roentgenoscopies made at first at intervals of a month, and then less frequently. All showed a progressive increase in the deposit of lime salts, recognized at the end of the first month, and showed only slight increase after a year. The size and shape of the tumor showed practically no change. The surrounding tissues apparently accommodated themselves to the pressure of the tumor, so that it has given him practically no inconvenience. The skin showed no damage as a result of the roentgenotherapy.

This case is of interest because: 1. It involved the deepest bones of the body in a large muscular man. 2. It seemed hopeless from any other method of treatment. 3. Improvement was recognized both by the symptoms and by roentgenoscopies at the end of a month. The patient is apparently well sixteen months after beginning treatment.

CASE 4 (Figs. 7 and 8).—H. G., a boy, aged 16, was referred to me for roentgenoscopy, Jan. 5, 1909, by Drs. Valentine Levi and H. C. Deaver. Five months previously while running a foot-race, he felt something snap in his right hip. He dropped to the ground, but in fifteen minutes got up and walked away. For a month after this accident any unusual movement gave him pain.

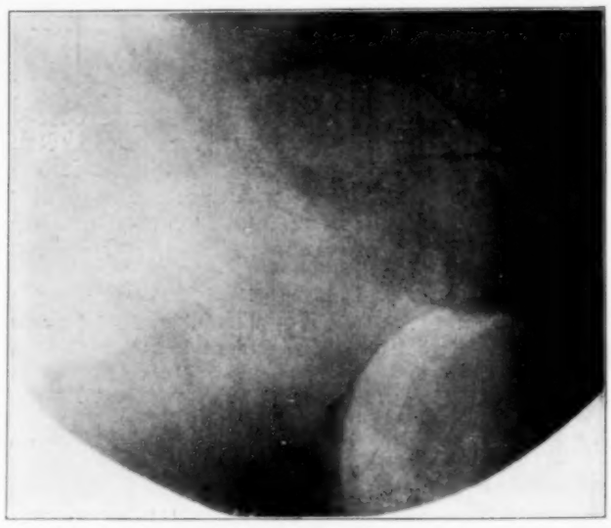

Fig. 8. Case 4.—After excision and active roentgenotherapy (July 8, 1909). (Plate reversed by the printer.)

Roentgenoscopies showed an osteosarcoma, about 2½ inches long and 1½ inches in diameter, growing from the ilium just above the acetabular cavity. This osteosarcoma was fractured during the foot-race five months previously (Fig. 7).

Dr. H. C. Deaver removed this osteosarcoma, Jan. 22, 1909, at the Stetson Hospital. Pathologic examination by Dr. Somers showed the tumor to be a giant-cell sarcoma at the center with spindle-cells at the periphery. During the first month after the operation Dr. Fisher gave twenty-one exposures of the Roentgen ray under my direction. During the next two months I gave sixteen treatments ending April 10, 1909. Since then, for over four years, the patient has remained perfectly well. He is at present traveling in Europe.

This case presents the following special points of interest: 1. The patient had no symptoms of the sarcoma which had developed until he fractured the tumor in a foot-race. 2. He suffered only occasional pain for five months afterward. 3. Excision followed by active roentgenotherapy has been followed by a cure lasting over four years.

CASE 5.—D. C., a girl, aged 14, was referred to me for examination by Dr. W. C. Batroff, Dec. 16, 1912. Nine months previously she injured the region of her left hip by a fall. Two days later a swelling appeared, which lasted two weeks. Two months after the injury the patient began to limp, and the hip became sore anteriorly.

Roentgenoscopy revealed no evidence of hip-joint disease or disease of the femur, but a large tumor shadow was found about the ilium, extending down over the hip-joint. The tumor contained no evidence of lime salts. I made a diagnosis of osteosarcoma.

Active roentgenotherapy was begun and continued over a period of three months; forty-four treatments were given, which were carried to the limit of skin tolerance. There was no evidence of deposit of lime salts; the tumor continued to grow until now its diameter is more than half the diameter of the body, and the patient is in the terminal stage of the disease. I believe now that the tumor is a chondrosarcoma, springing from the cartilage between the body and the epiphysis of the crest of the ilium, and because it is this type of tumor I have failed.

CASE 8.—E. B., a boy, aged 15, was referred for treatment by Dr. William L. Rodman, Oct. 29, 1902. He had been operated on by Dr. Rodman for osteosarcoma of the left side of the upper jaw two years previously. A recurrence, which now involved the entire anterior surface of the upper maxilla, had been noticed five months before he came for roentgenotherapy. He received sixty treatments in eight months. There was some reduction in the size of the tumor, and he has remained well now eleven years. The lower part of the left superior maxilla is still enlarged and very hard, but is quite well. The overlying skin shows some telangiectases.

CASE 9.—S. W., a boy, aged 9, was referred to me for roentgenotherapy, April 4, 1909, by Dr. Stillewell Burns. He had an osteosarcoma about the size of a peach stone in the right upper jaw, in the cuspid region. He had been suffering from pain for about two months. Roentgenoscopy revealed irregular destruction of the cancellous tissue, such as is seen in sarcoma. The patient was examined, and a section removed by Dr. M. I. Shamberg, April 24, 1909. He had been treated by the rays eight times preceding this section, and there was some reduction in the size of the tumor. Microscopic examination by Dr. H. S. Wieder showed it to be a spindle-cell sarcoma. He received 120 treatments (each treatment being two-tenths of a full erythema dose) in six months, when he seemed to be well. He has remained well for over four years. The cuspid tooth is twisted on its axis so that the cutting edge is at right angle to the normal, and there remains some thickening of the bone at this point, but otherwise nothing abnormal.

This case shows the following instructive points: 1. What at first seemed to be a benign epulis proved to be an osteosarcoma of spindle-cell type. 2. Surgical treatment, even if successful in removing the disease, would have demanded considerable resection of the jaw, with at least considerable deformity. 3. The healing process led to a twisting of the tooth but did not interfere with its growth and development. 4. The patient has remained well over four years.

CASE 12.—W. H., aged 7, was referred for treatment by Dr. D. B. Kreider, Aug. 22, 1911. During six weeks a tumor had developed in the left lower jaw in the region of the cuspid and bicuspid teeth. It was now about 1½ inches long, 1 inch wide, and elevated about ½ inch above the surrounding surface. A section examined by Dr. H. S. Wieder showed the tumor to be a giant-cell sarcoma. Roentgenoscopy showed a disturbance in the cancellous structure of the alveolar process and irregular absorption of lime salts. The patient was treated by the Roentgen rays fifty-two times in four months, each exposure giving about two-tenths of an erythema dose. At the end of this time he was apparently well. He has remained well eighteen months since, and I believe that he is permanently cured. He has no loss of tissue, no deformity, and simply has some displacement of two teeth which have erupted since the tumor has healed, and were either displaced by the growing tumor or by the sclerosis following the treatment. The cancellous tissue is slightly more dense than normal.

This case, like Case 9, shows: 1. Healing without interruption of the development of the teeth, but followed by some displacement. 2. Healing without damage to overlying or underlying tissue.

TECHNIC

A review of the brief reports of the foregoing cases will show that this treatment and these observations have extended over a period of eleven years; the technic has, therefore, undergone a progressive evolution, the duration of the treatment and the number of exposures being very much reduced in the later cases. For the sake of brevity I shall refer only to the principles governing the modern technic. These are:

1. The rays must have good penetration, or they will be absorbed by the overlying tissues before reaching the bony tumor. Even with the most penetrating rays the greater proportion will be absorbed by the superficial tissues. The most careful attention is therefore necessary to keep the tube in good condition during the entire treatment. The rays should have a penetration of from 7 to 8 of the Benoist scale.

2. The quantity of rays should be measured carefully during each application, and the limit of the erythema dose should be reached as quickly as possible, but should not be exceeded. The duration of each application and the frequency will depend on the individual operator's technic and apparatus, but when an erythema dose has been given at any one area of skin, this one area should receive no more treatment for at least two weeks. To measure the dose I use the Sabouraud pastille and the Holzknecht modified scale, or radiometer.

3. The skin should be protected by filters. For this I now use a piece of sole-leather ⅛ inch thick, and from 1 mm. to 3 mm. of aluminum. This, of course, decreases the total quantity of rays, but gives a greater proportion of penetrating rays in comparison with those absorbed in the superficial tissues. It must not be forgotten that a patient can be burned through filters, and a burn is always a disadvantage.

4. Cross-fire application of the rays consists in directing them toward the center of the tumor from as many angles and through as many different areas of skin as possible. In this way the proportional deep dose is greatly increased, and it is possible to make the dose in the tumor equal to that absorbed by the skin. With such technic massive doses can be given safely.

CONCLUSIONS

1. Osteosarcomas heal by a progressive deposit of lime salts in the tumor areas, until the tumor area attains the solidity and density of normal bone.

2. This process usually begins within a month and is progressive for a year or more, continuing long after the roentgenotherapy has been discontinued.

3. In the twelve cases treated, including the inoperable and recurrent, seven, or over 58 per cent. of the patients have completely recovered and have remained well from five months to eleven years. One other patient had nearly recovered, interrupted treatment, and remained free from symptoms five months, when a recurrence followed traumatism. In only one case was there no improvement.

4. Skilful treatment should be given in any inoperable case and should follow when operation seems advisable.

5. When operation will result in deformity or serious loss of bone, roentgenotherapy should be tried for at least a month.

6. The treatment should be given by some one who is familiar with the technic of deep roentgenotherapy.

1321 Spruce Street.

WHAT CAN BE DONE IN CANCER WITH ROENTGEN RAYS?*

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Undoubtedly the Roentgen ray as a therapeutic agent in cancer has lost ground in the estimation of the profession. It has gone through the familiar cycle: promise, exaggerated expectations and statements, disappointments and reaction. In the case of Roentgen rays the course has been particularly unfortunate; the agent lends itself so readily to sensational exploitation and its application is so outside the usual routine of medical and surgical procedure that many conservative men have neither undertaken to use it, nor—what is more unfortunate—made themselves familiar with what might be properly expected from it or with its actual results; while on the other side its haphazard application is so easy that many untrained men have used it with much damage to its reputation.

What are the facts? Is the skepticism concerning it a just and temperate judgment? Has it failed to live up to its early reasonable promise, or is it simply suffering from lack of appreciation and from ignorance in the minds of the profession of its actual accomplishments? To confine ourselves to the question in hand, has it proved an addition of any practical value in cancer—using that term to include all forms of malignant growth? Can anything practical be done with it that cannot be done by better established methods, or is it of so little use that it may be properly neglected in the treatment of our cases of cancer?

The most cursory observation leaves no doubt that Roentgen rays can destroy carcinoma tissue on the surface of the body. This is done most readily, perhaps, in basal-cell carcinomas—rodent ulcers—but it can be done also in typical squamous-cell epitheliomas. The statement is sometimes made that in true squamous-cell carcinoma, Roentgen rays will not destroy the lesions. In refutation of this, I have offered the accompanying case (Figs. 1 and 2), the first case of squamous-cell carcinoma (Fig. 3) that I treated with Roentgen rays. The patient remains well to-day, twelve years after healing, with the cosmetic result shown in Figure 3. I could offer scores of similar cases of squamous-cell carcinoma and as many of rodent ulcers. The accompanying illustrations of a few cases are selected as offering certain visible evidence of Roentgen-ray effects in cutaneous carcinoma (Figs. 4 to 7).

Fig. 1.—Squamous-cell epithelioma of the nose, May, 1901.

Fig. 3.—Result of Roentgen-ray treatment of lesion shown in Figure 1, March, 1912.

In my experience the type of epithelioma makes little difference; basal cell or squamous cell, any epithelioma on the surface may be destroyed with Roentgen rays. Some lesions yield much more readily than others; but this variability does not amount to complete resistance in any case, and the point I wish to make here is that epithelioma tissue in the skin can be destroyed by Roentgen rays with practical certainty.

If the applications are properly graduated, the carcinoma cells degenerate, disappear and are replaced by healthy scar tissue. Various men, including myself, have described the microscopic changes that occur in this process, so that I shall not delay to do it again here, but shall only call attention to the fact observed in sections taken during various stages in the process, that at the beginning we have carcinoma and at the end we have in place of it firm healthy scar tissue.

As to Roentgen rays in epithelioma I believe it may be said almost without reservation that any epithelioma which has not metastases and which has not deeply involved the subcutaneous tissue may be symptomatically cured by Roentgent rays. By symptomatically cured, I mean converted into healthy scar tissue, as healthy scar tissue as can be obtained after the excision

* Owing to lack of space this article is here abbreviated by omission of four photomicrographic studies of diseased tissues. These are presented in the Transactions of the Section and in the author's reprints.

* Read in the Section on Pharmacology and Therapeutics of the American Medical Association, at the Sixty-Fourth Annual Session, held at Minneapolis, June, 1913.

of epithelioma. The superficial extent of the carcinoma is, of course, a factor of some consideration in the prognosis; but the most extensive epithelioma that I have seen I have symptomatically cured with Roentgen rays. I have seen lesions involving areas of from 30 to 40 or 50 square inches converted into healthy scar tissue.

Fig. 4.—Epithelioma of face.

Fig. 5.—Result of Roentgen-ray treatment of patient shown in Figure 4.

Fig. 6.—Epithelioma of temple.

Fig. 7.—Result of Roentgen-ray treatment of patient shown in Figure 6.

When there is deep involvement of subcutaneous tissues, as in epitheliomas invading the orbit or extending down deep into the bones of the face, Roentgen rays may fail; but I have seen unexpectedly successful results in cases of this sort, as, for example, in epitheliomas involving the bones of the nose. When there are metastases in the contiguous lymph-nodes, Roentgen rays usually fail, but here likewise at times we have successful results.

As to the permanence of the results in epithelioma, some of my cases have gone more than ten years without recurrence, and I believe that whenever you are able to get a satisfactory scar you may count on a permanent result. As regards permanency of results, I believe the cases will bear a fair comparison with those treated by any other method. As to the range of application of Roentgen rays in epithelioma, it may, in my opinion, be said that any case of epithelioma is suitable for treatment with Roentgen rays in which, if a wise surgeon were

operating, he would not feel called on to remove the contiguous lymph-nodes. If the case is one in which the removal of the contiguous lymph-nodes is indicated, it should be treated surgically, and not with Roentgen rays. That statement, I trust, covers the question of the treatment of epitheliomas of the lip with Roentgen rays.

The foregoing paragraph is a practical repetition of a statement I made seven years ago, and my longer experience makes me more than ready to stand by this position now.

Fig. 11.—Recurrent carcinoma of breast.

But granting that epitheliomas on the surface can be destroyed by Roentgen rays, what evidence have we that deeper malignant growths can be affected? From my experience I can produce much evidence on this point, as can many other men who have used Roentgen rays in this field. Take the following cases for examples:

REPORT AND DISCUSSION OF CASES

Case 1.—Figures 11 and 12 show the effects in one of my earliest and most striking cases of recurrent carcinoma of the breast treated with Roentgen rays. In this case a great mass of carcinoma, recurrent after repeated operations by Dr. Christian Fenger, had entirely disappeared and been replaced by smooth, healthy looking scar tissue after four months of Roentgen-ray treatment.

Case 2.—Miss ——, aged 49, had the left breast removed by Dr. Nicholas Senn in February, 1900; this was followed by a recurrence which Dr. Senn removed in October, 1900. She had a second recurrence which Dr. A. J. Ochsner considered inoperable; he sent her to me for Roentgen-ray treatment in November, 1901. She had a dense deep-seated mass of carcinoma tissue involving the chest wall, with coin-size ulcer at two points. This all disappeared under Roentgen-ray treatment. Six months later she developed a hard mass under the nipple of the other breast. This also disappeared under Roentgen rays. This patient went on until 1907—nearly six years—without recurrence and in comfort, during all of this time occupying a laborious position of responsibility. In discussing this case in April, 1902, Dr. Ochsner expressed the opinion that she would surely have been dead at that time, but for the effects of Roentgen rays.

Case 3.—Mrs. ——, aged 45, referred to me by Dr. T. A. Davis, had the left breast removed for carcinoma in May, 1901. In spite of moderate prophylactic Roentgen-ray exposures, nodules appeared in the axilla, with swollen arm, early in 1902, and soon afterward there developed hard lymph-nodes in the supraclavicular space. Under very vigorous Roentgen-ray exposures, carried to the point of producing ultimately atrophy and telangiectasia of the skin of the areas exposed, all of the carcinoma masses disappeared, with the exception of small palpable masses representing the lymph-nodes. Although the condition had hitherto been regarded as inoperable, it was decided now to remove these lymph-nodes. On operation, instead of a mass of lymph-nodes infiltrating the jugular wall as had been feared, small masses of fibrous tissue were found which were easily dissected out without damage to the vessels. The patient was well nine years later and I believe remains so now. The inevitable natural career of such a patient is, of course, death in a period measured by months.

The following two cases of primary carcinoma of the breast are interesting in this connection:

Case 4.—Mrs. C. C., aged 45, was referred to me by Dr. C. Z. Aud of Cecilian, Ky., in January, 1902, with a diagnosis of carcinoma of the breast for which operation had been urged repeatedly but refused. There was a large nodular hard movable mass in the right breast, with retraction of the nipple. It had been slowly enlarging for four years accompanied during the last year by frequent shooting pains. The patient was exposed to Roentgen rays regularly from January to May, 1901, and had one series of exposures in June, 1903. The result was complete disappearance of the tumor and she is living and well to-day with a breast free from tumor—eleven years after coming under treatment.

Case 5.—A similar case was that of Mrs. C., aged 55, referred to me in October, 1902, by her son, a physician, and Dr. William E. Quine of Chicago with a diagnosis of carcinoma of the breast. In the right breast there was a lemon-sized nodular mass just beneath the nipple, which had been noticed two weeks before. One lymph-node was palpable in the axilla. Operation was refused. The patient had nearly

Fig. 12.—Result of Roentgen-ray treatment of case shown in Figure 11.

a hundred Roentgen-ray exposures during a period of three years. I saw her living and well in February, 1910, eight years after. The breast tissue was perfectly soft, and there was no suspicious point, in either the breast or the axilla. I believe she remains well now.

The clinical diagnosis of carcinoma was as clear as possible in both of these cases and they had been regarded as carcinoma by numerous competent consultants. These cases constitute two of the three cases of

operable primary carcinoma of the breast which I have treated; the third was a failure. They are not recited as an argument in favor of using Roentgen rays instead of operation in operable cancer of the breast, but as evidence of deep-seated Roentgen-ray effect on cancer.

Similar evidence is furnished by the post-mortem findings in the following two cases:

CASE 6.—The first patient, an old woman referred to me by Dr. E. Wyllys Andrews of Chicago, had a large primary carcinoma of the breast without involvement of the skin, with enlarged axillary lymph-nodes, and with spinal metastasis when the treatment was begun. The patient had vigorous Roentgen-ray exposures lasting about a month, with the production of a dermatitis which subsided completely before her death, about three months after the treatment began. Post mortem it was found that the breast was a mass of connective tissue without any carcinoma tissue remaining. The same was true of the axillary contents; they were converted into a mass of connective tissue.

CASE 7.—In the second case, that of an old woman referred to me by Dr. J. B. Murphy, there was a large primary carcinoma of the breast without involvement of the skin and with enlargement of the axillary lymph-nodes. The patient had vigorous treatment for six weeks, with the production of only a mild reaction. Two months after the treatment, Dr. Murphy wrote me, "I saw Mrs. ——— on last Friday. The carcinoma of the breast has entirely disappeared, but she is suffering from a gastric disturbance from which I fear she will die." She died soon afterward and post mortem it was found by Dr. W. A. Evans that the tumor had been converted into a small fibrous mass. Microscopically it consisted of fibrous tissue bands with a few islets of epithelium, some of the epithelium being in a fair state of preservation, but most of it in a state of advanced retrogression. In these two cases we had carcinoma tissue beneath skin and fat destroyed without destruction of the normal surrounding tissue.

I could recite many more cases of cancer of the breast in evidence of the destructive effect of Roentgen rays on carcinoma tissues situated relatively deeply, but my object now is not so much the presentation of cases as the production of a few definite facts.

A considerable number of cases of sarcoma presenting similar evidence of a selective destruction of sarcoma tissue could be produced, but because the results are so similar I shall give the briefest statement. In general, sarcoma tumors diminish under Roentgen rays more readily than do carcinomas, but because of the more rapid disssemination of sarcomas, radical benefit is less frequent. I have, however, some cases of sarcoma in which most unexpected good results have occurred—results that have lasted a dozen years or more.

CASE 8.—One good result is a case of mixed round and spindle-cell sarcoma in Scarpa's triangle in a woman operated on by Dr. William J. Mayo in April, 1905, and referred to me by him a few weeks later with a very unfavorable prognosis. There was a reappearance of the tumor, which disappeared under Roentgen rays. She was well in August, 1911—six years later—and I believe is well now.

CASE 9.—Another is a man operated on by Dr. Alexander Hugh Ferguson in 1907 for osteosarcoma behind the clavicle, and referred to me February, 1908, with a mass behind the site of the clavicle, which had been removed, and in the supraclavicular space. This man remains well with no evidence of sarcoma at present—five years after he was regarded as hopeless. He is a vigorous man, active in an exacting occupation.

These cases are of course selected ones; I have seen many cases that have failed, as fail many cases must with a disease like cancer; but these selected cases are only a few of a great many such cases that I might select to show equally striking results. So many cases like these can be produced that they cannot be explained away on the theory of the occasional spontaneous subsidence or disappearance of cancer.

I cannot here present any extensive data on the prophylactic value of Roentgen rays after operation; but I would like to recount briefly one case of cancer of the breast:

CASE 10.—Mrs. ———, aged 45, a physician, came to me in May, 1902, in fear of a recurrence in the chest wall after carcinoma of the breast. Her family history was as follows:

Paternal History: Grandfather, carcinoma of stomach; grandaunt, carcinoma of breast; granduncle, carcinoma of stomach; uncle, carcinoma of intestine; uncle, carcinoma of intestine; brother, carcinoma of intestine; cousin, supposed carcinoma of intestine; cousin, carcinoma of intestine.

Maternal History: Aunt, carcinoma of uterus; aunt, carcinoma of breast, removed, no recurrence; cousin, carcinoma of breast, removed, subsequent history not known. In all ten or eleven carcinoma cases of which she knows in her family in three generations.

The patient's own history was as follows: Left breast amputated for carcinoma, December, 1899; muscles removed from left side, January, 1900; right breast removed, April, 1900; nodule removed below left clavicle, August, 1901; nodule removed above clavicle, February, 1902; nodule removed in neck, March, 1902; nodule removed in neck, April, 1902. Two of the operations were done by Dr. W. W. Keen of Philadelphia, and some others by his associates.

The patient came to me in May, 1902, for Roentgen-ray exposures. She had seven series of exposures between May, 1902, and November, 1905, in all 127 treatments. She has gone now eleven years without further recurrence. It may be pointed out that she had swelling of the supraclavicular lymph-nodes eleven years ago, and such cases are practically invariably fatal. Of course, she might not have had any further recurrence without Roentgen rays, but I venture to believe it would be hard to convince her, with her experience, of that fact.

What is the practical bearing of such facts? And in view of them, what use should be made of Roentgen rays in cancer? In the first place, I would point out that the selective destruction of cancer tissue by Roentgen rays (and radium) is a unique thing. It is something that has never been done before and that no one can now do in any other way. And such cases as I have referred to above show that some practical effect can be produced in cancer after all has been done that is possible by mechanical or other methods of gross destruction. Many cases cannot be helped, but some can be saved. And until a specific remedy for cancer is found, of which there seems little promise now, patients are entitled to the unquestionable prospects of benefit that Roentgen rays offer in many cases. From such a point of view I have used Roentgen rays in cancer for many years and I am sure that the agent has saved a good many patients from an impending death; it has added in the aggregate many years of life in comfort to patients whom it has not cured, and it has saved much suffering to many others whose lives it has not prolonged. On the other side it has often failed; but I believe it has not added to the misery or made worse the lot of any patient. An agent of which these things can be said in so wretched and intractable a disease as cancer is entitled to respect, and is worthy of a better opinion than the skepticism with which it is now considered by many minds.

For example, surgeons as a rule, I believe, fail to appreciate the value of Roentgen rays as an adjuvant to surgery in the treatment of cancer cases. Roentgen rays are useless in many cases of cancer; therefore the method is condemned as useless in all cases, and operation or nothing insisted on always, just as though operation

were not useless or worse than useless in many cases also. The Cancer Campaign Committee of Surgeons of North America in its public statement on cancer says, "Cancers can be successfully treated by the knife. . . . there is no chance of recovery except in surgery." This last sentence is not true. The first sentence also is true for the most part only of cancers situated superficially in the body, and many cases of that sort have been cured for a hundred years by other destructive measures than surgery. Surgery is the method of preference for most cancers, and it is well for surgical organizations to teach the public that fact. But if there is anything that surgery should be humble about and alert for help in, it is cancer.

SUMMARY

The effects of Roentgen rays on cancer tissues and clinical experience indicate the use of the agent in cutaneous epitheliomas, and in localized inoperable cancers near the body surface; and further, I believe that the same facts constitute a logical demand that Roentgen rays be used as a measure of prophylaxis after operations on localized cancers near the surface of the body. I specify localized cancers near the surface, because experience has shown that in cases in which the disease has become widely disseminated, and in cancers in the deep cavities of the body, Roentgen rays are practically without avail.

7 West Madison Street.

ROENTGENOTHERAPY IN MEASURED MASSIVE DOSES *

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When I accepted the invitation to take part in the program of this section I planned to report some results of roentgenotherapy in massive doses in certain types of malignant conditions which had heretofore not only been refractory to roentgenotherapy, but also, because of their location and anatomic relation, had been regarded as unfavorable from the surgical point of view. I am unfortunately not able to make this report for two reasons: first, because the most of the cases under observation have not been under treatment long enough to warrant drawing conclusions, and secondly, because I am not sure that I have overcome certain obstacles in the technic of the administration of efficient irradiation of these cases. I shall therefore limit myself to some remarks on the measured massive dose.

By efficient irradiation is meant the administration of a dose which will accomplish the desired result; of course, the desired result must be a possible and practical one. In other words, the pathology of the condition selected for roentgenotherapy must be well considered. We must know by experimental deductions or clinical experience that the Roentgen ray will influence the lesion in the desired way. For instance, it is a commonly accepted fact that the Roentgen ray will cause degeneration and destruction of certain cells which we call cancer cells. Any one can demonstrate this by experimentation. But most important is the fact that the Roentgen rays will destroy cancer cells without injuring normal tissue cells which have been subjected to the same dose of Roentgen rays. Because the Roentgen ray does this, it is said to have a "selective" action on cancer cells. What is really meant by the term "selective action" is that the cancer cells are more susceptible to the Roentgen ray, either because they have a higher coefficient of absorption for Roentgen rays than normal tissue cells, or because owing to their subatomic make-up or abnormal metabolic activity, they are less resistant to the influence of the Roentgen ray.

Early in the Roentgen era Guido Holzknecht made the simple yet classic statement that every living cell which has absorbed Roentgen rays will suffer a chemical change which may produce no appreciable effect, or may result in stimulation, irritation or degeneration. The effect of Roentgen-ray exposure on any cell will depend on two factors: (1) the amount of rays absorbed by the cell as determined by certain conditions which are imperfectly understood, chief of which is perhaps the ultrachemical structure of the cell, or in gross terms, the morphology of the cell, and (2) the susceptibility of the cell to the Roentgen ray, the so-called radiosensitiveness of the cell. Among the factors determining the sensitiveness of the cell to the Roentgen ray are the function of the cell, its physiologic relation to the rest of the organism, and its metabolic activity.

The problem for the roentgenotherapeutist then, resolves itself into the fulfilling of three requirements:

1. Certain cells or tissues must be supplied with the kind of rays or quality of rays which they can absorb, for cells are influenced only by absorbed rays.

2. The rays supplied to these cells or tissues must not injure the surrounding overlying or underlying normal tissues.

3. The rays must be supplied in sufficient number or quantity to bring about the desired changes.

In the present state of our knowledge of roentgenotherapy we are not certain that any of these conditions can be fulfilled absolutely. Yet we are fairly well acquainted with the differences in the biologic action of hard and soft rays, and our technic has advanced to the point of enabling us to produce at will rays which are for the most part hard and penetrating, or for the most part soft and non-penetrating.

In the fulfilment of the second requirement, we are aided largely by the fact that as a rule tissues which are normal morphologically and physiologically are much more resistant to the influence of the Roentgen ray than are tissues which are abnormal or pathologic, from either the morphologic or the physiologic aspect.

The third requirement, namely, that of supplying the sufficient, yet not excessive quantity, is the one that concerns us chiefly at this moment. The introduction of the measured dose promises to fulfill this requirement and is one of the most important forward steps in the history of roentgenotherapy. Roentgen-ray dosage is thus relieved in a measure at least from the stigma of inaccuracy and empiricism, and is placed on a rational biologic basis. Analogous to drug therapy in order to elicit the fullest physiologic effect, the full physiologic dose must be administered. To give small doses of Roentgen rays when the maximum effect is desired is analogous to giving 5 grains of potassium iodid at a dose when it is desired to elicit the full therapeutic action of the drug. The full therapeutic action of the Roentgen ray is elicited in the tissue only when by the complete saturation of the tissues the fullest reaction is excited which is compatible with the integrity of the overlying or surrounding normal tissues. Roentgen-ray dosage which falls short of this amount can elicit the full effect only when by frequent repetition of the dose

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the so-called cumulative action in the tissues becomes manifest. To await the development of accumulative effects following repeated small doses is not only uncertain, since the saturation point may never be reached, but it also invites chronic changes in surrounding normal tissues. It is furthermore wasteful of time and energy. In giving Roentgen-ray treatments we are delivering physical energy to the tissues, and the required amount must be delivered in sufficient mass to excite a reaction and thus overcome the inertia of the tissues. We may cite a homely mechanical analogy in the energy required to drive a spike into a board. Repeated small blows from a tack-hammer will never accomplish the results of a single blow with a sledge-hammer, although the total amount of energy delivered may be the same in each instance.

I need not refer to the early days of the Roentgen era when by the fractional dose method, small and often inefficient doses were given which extended the treatment over many months. While in many cases and at the hands of certain men brilliant results were obtained, yet not infrequently the results were incomplete or failures. The small doses often stimulate the lesions instead of checking them; again, the lesions acquired a resistance or tolerance for the Roentgen ray which negatived the results. Furthermore, the long-continued exposures invited late secondary changes such as atrophy, etc., in the surrounding tissues with the possibility of later and more dangerous sequelae.

A comparison of past results obtained by the fractional dose method with more recent results obtained by the single massive dose method has renewed enthusiasm in roentgenotherapy. By way of comparison I recall treating a large basal-celled cancer on the cheek of an old woman for a period of six months before effecting a cure, and more recently of treating a lesion almost identical in location and character by the single massive dose method and effecting a cure in five weeks without repeating the treatment. Another instance, fresh in mind, is that of a doctor who was referred for treatment with an epithelioma of the lower lip of eighteen months' standing, involving more than half of the mucocutaneous margin, and more than ¼ inch deep. Submental lymph-nodes were not palpably involved. In the opinion of several surgeons it was an operative case, but a brief trial with the Roentgen ray was suggested. One massive dose was given and at the end of four weeks most of the infiltration was gone and the epithelium had completely covered the area. The patient remains free from recurrence to date, but presents himself for observation once a month, at which times light prophylactic doses have been given.

I need not multiply the evidence to support the efficacy of the single massive dose. Interesting to note in this connection is the fact that not infrequently the epithelium will completely close over an ulcerated skin cancer following a single massive dose before all of the underlying infiltration has disappeared, but without further treatment the remaining infiltration will entirely disappear. In some instances it has been necessary to repeat the dose, either because there was underdosing through faulty technic at the first treatment, or underdosing at one angle or margin of the lesion. The prickle-cell type is of course more resistant than the basal-cell type, and may require repetitions of the treatment. In the fungous types of skin-cancer in which the lesion is of considerable thickness, several doses may be required, which is in harmony with our knowledge of the physical principles of roentgenotherapy. The physical dose (or crude dose) is the amount of rays absorbed by any tissue divided by the number of layers of cells or thickness of the tissue. Hence, in treating a thick or fungous lesion the lower layers of cells will be underdosed, owing to the loss of intensity due to absorption. It is possible that a preliminary curettement may facilitate the administration of the efficient dose to the lower layer of cells in one exposure and thus shorten the treatment.

The massive measured dose, while finding its most brilliant application in the treatment of skin-cancer, should by no means be confined to the treatment of superficial malignancy, but should be extended and applied to every field of roentgenotherapy. Chronic eczema, psoriasis and other chronic skin lesions are better treated by the measured massive dose than by fractional doses, although the dose administered need not always be the full erythema dose. .

I have been applying this method to various forms of deep therapy with surprising results. An aluminum filter varying in thickness from 1 to 3 mm. is used, and the pastil is of course placed under the filter. This method has increased the efficiency of postoperative prophylactic treatment of malignancy and has hastened the improvement in recurrences.

Two neglected cases of cancer of the chin are under treatment. Both started from a cancer of the lip, and when the patients presented themselves for treatment, each had a large tumor involving lip, chin and neck, the tumor mass weighing perhaps half a pound and protruding several inches beyond the line of the chin. Under massive doses of Roentgen rays, both cases have improved remarkably. In one case practically all of the infiltration has disappeared and the parts have assumed normal proportions, except for a partial destruction of the lip.

In the roentgenotherapy of uterine myomas, climacteric hemorrhages, etc., the massive dose technic has been found superior to the fractional doses as shown by the statistics of Gauss in the Freiberg clinic. By means of the aluminum filter 3 mm. thick and a compression band to exsanguinate and thus desensitize the skin, it has been possible by Gauss, Schmidt and others to give as much as four times the erythema dose at one exposure and in one series extending over several days to subject the same area of the skin to from six to ten times the erythema dose without apparent injury. By varying the areas of skin exposed it is thus possible to deliver tremendous quantities of Roentgen rays to the deeper tissues. Gauss reports applications to the ovaries of more than one-hundred times the erythema dose in one series of treatments.

Cases of enlarged thymus in children have been cured in one or two massive treatments. This method seems to promise something in the treatment of certain forms of malignancy which are unfavorable for surgical intervention and which are likewise regarded as not amenable to roentgenotherapy. I refer to certain types of cancer about the gums, jaws and tongue. If treated surgically these cases demand heroic measures, producing great deformity and leaving a doubtful prognosis. In this class are especially included those cases of malignancy occurring at the angle of the jaws involving the gums and alveolar process of both upper and lower jaw, or malignancy of the tongue or jaws which extends beyond the midline, and which if treated surgically would mean a great sacrifice of tissue, with great deformity and a doubtful prognosis. As recorded results of massive roentgenotherapy in this class of cases

is rather meager, I have undertaken to test out the method in a series of such cases which have been considered by surgeons to be unfavorable risks. The inaccessibility of many of the lesions has been the chief difficulty since the efficient massive dose must be delivered to each cancer cell. Special devices such as lead tubes to direct the rays to the proper areas, mouth gags and clamps to evert the lips, etc., are being used. In some cases a preliminary surgical operation such as splitting the cheek to expose the lesion seems necessary. One very favorable result has been achieved so far. The case was that of a cancer of the tongue involving the anterior part of the tongue and extending beyond the midline; a small submaxillary lymph-node was palpable. Under vigorous roentgenotherapy of the tongue and neck the infiltration of the tongue has disappeared and the lymph-node is no longer palpable. A symptomatic cure has been obtained and after a lapse of almost a year no recurrence is evident.

It would seem that the ability to administer the measured massive dose is a sine qua non of successful roentgenotherapy. As the technic is mastered the field of roentgenotherapy seems destined to broaden, which is shown by the successful treatment of certain gynecologic conditions by this method as practiced in many German clinics.

After the technic of measuring the dose in certain units has been mastered, the problem of how many units to give is still uncertain, and to a large extent dependent on individual judgment. In determining the amount required for the treatment of any condition, it must be remembered that the biologic or active dose is the physical (or crude) dose multiplied by the coefficient of susceptibility of the tissues under treatment.

In applying these heavy doses we must not be unmindful of the possible dangers, and possible late effects from the repetition of such doses. Iselin has recently shown that by the use of a filter the erythema dose may be frequently repeated without danger of late results, the danger limits varying in the different regions of the body. It is apparent, however, that such a method as this must remain in the hands of those specially trained and skilled in roentgenology.

5 Garfield Place.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. LANGE, PUSEY AND PFAHLER

DR. L. T. LEWALD, New York: I wish to confirm the statement of Dr. Pfahler in regard to the deposit of lime salt after treatment. The case I refer to was treated thoroughly with radium. It was under observation for about four months. It was an osteosarcoma of the head of the humerus of which a section was removed and pronounced sarcoma by Dr. Wood; Dr. Abbe made an incision and introduced radium. In about a month there was an increase in the lime salts. This increase has continued three months and the case is still under observation.

DR. G. BETTON MASSEY, Philadelphia: I wish to corroborate what Dr. Pusey said about the penetrating value of the Roentgen ray in some carcinomas by mentioning very briefly at least two cases of secondary growths in the neck above the clavicle—secondary to carcinoma of the breast—that have apparently disappeared under the roentgenotherapy. It is well known that absolutely no other method could have effected such results in these two cases. The terrible misuse of the Roentgen ray, aside from the mortality of some of the operators, shows a need of greater cooperation among members of the profession in order that the best may be done in a given case, whether it be some form of surgery or of Roentgen-ray treatment. Our friends, the surgeons, should get over that intolerant attitude that assumes that some one procedure is of divine origin and must be used simply because it is conventional. I object also to the limitation of the expression "surgery" to that form of hand action which uses the sharp knife. The meaning of the word is simply the doing of something with one's hands. Anything that is employed by the hand in hand work for the local destruction of disease or the treatment of the patient is surgery, even if it is not cutting with steel, and if it produces a better result than some other kind of surgery in a given instance it is good surgery. We want to select the best way to deal with these cases and to remember with open-mindedness that different agencies are required for different phases of the disease even in the same patient.

DR. KENNON DUNHAM, Cincinnati: As Dr. Pusey has said, roentgenotherapy is falling into disuse through being handled by untrained men and with improper technic. Papers of this kind which deal with technic and refer to results obtained and substantiate these results by photographic proofs before and after treatment tell the tale better than any amount of writing. Men who have been getting results have been paying much attention to the technic of this work.

DR. J. M. KING, Nashville, Tenn.: The doubt as to the efficiency of the Roentgen ray in the treatment of carcinoma should be wiped out in a body of experienced physicians. Since 1904 I have used the Roentgen ray and my results will parallel those of Dr. Pusey. At first I used small doses, but I have from my own experience increased the mass of the dose, giving only six or eight exposures, or maybe less, in the average-sized epithelioma. I should like to ask Dr. Pfahler to give his technic in treating sarcoma of the bone.

DR. A. M. COLE, Indianapolis: The massive-dose method has many points of merit, but I have been deterred from using it because of my very strong belief that we do have patients who show an undue susceptibility to the effects of the ray. I know that there are some workers in this field who have come to believe that this is not true; but in my experience I occasionally find a patient in whom a half or third of an erythema dose will bring about a marked dermatitis. For instance, in the last month I have treated a young lady for a lesion on her hand, and after two treatments with the fractional dose method, which I use, she developed a very painful dermatitis. The average patient could have taken eight or ten such treatments before showing the slightest erythema. It does not make any difference if we get a marked dermatitis in treating cases of deep carcinoma or epithelioma, but in skin diseases such as acne, eczema, etc., the massive-dose method, followed, in a susceptible patient, by a severe dermatitis particularly about the face, might be a very serious matter. This objection will always, in my mind, limit the use of the massive-dose method, given at one sitting, to cases of carcinoma and for depilation.

DR. W. A. PUSEY, Chicago: I sympathize thoroughly with the scientific ideals which attempt to determine the limits of physiologic safety of Roentgen-ray exposures, but up to the present time I have been constrained to hesitate about adopting the maximum-dose method in my practice. I have done this for three reasons. First, I am sure that I have had my best therapeutic results by a technic which consists of fractional doses, not of a few heavy applications. Certainly in my experience the attempt at a radical quick dose has not proved as therapeutically efficient as several cumulative doses. In the second place, I cannot get away from the feeling that we are running a considerable amount of danger in the use of massive doses. We can make all of our factors the same except one, and that is the factor of the individual, the personal equation of the patient. At any rate, I do not feel that one patient will react just as the next one will. If I can draw any conclusion from my experience it is that there is a difference of susceptibility in patients. In the third place, to give a massive dose requires attention to a group of important factors, and I think that in routine work the danger of some error is not to be overlooked. As a matter of fact I have been consulted to-day about a burn following

a massive dose of Roentgen rays for destroying ringworm, so that the idea of danger is not purely a theory. As for my technic I give repeated doses of Roentgen rays until I produce my effect.

DR. G. E. PFAHLER, Philadelphia: I agree with Dr. Lange that the massive dose is the ideal dose and the nearer we approach it the nearer we approach the ideal, but it is also a more difficult thing to give, requires much greater skill and involves a much greater risk, so that if we want to be on the safe side we had better stick to the small doses. I myself work toward the massive dose, but I do not attempt to give the complete treatment in one dose. I do not treat epithelioma, as I did originally, however, with twenty-five or thirty applications, but give from three to six; in other words, I approach the massive dose as nearly as I can with safety. I believe that there is a certain amount of individual susceptibility, but I believe a great deal of the supposed susceptiblity is due to the variation of the tube used.

DR. SIDNEY LANCE, Cincinnati: I appreciate that our units of measurement are yet imperfect and subject to variations, and that brings in the factor of the manufacturer, just as it is brought in by the variation in pastils or bromid paper or whatever meter we may use to measure the dose. I still believe, however, that, if the technic is mastered, the results are very much better with massive than with the fractional doses. I looked idiosyncrasy up some time ago and read all the literature I could possibly find on the subject, and in the report of the committees the consensus of opinion was that what we consider to be idiosyncrasies on the part of the patient are variations in technic, that a Roentgen-ray tube is a very much more unstable thing than the patient and that, while we may think we are repeating our technic from day to day, there are certain variations in the filter or the tube used, and in the susceptibility of the part of the body treated. When I produced burns the trouble was not due to idiosyncrasy on the part of the patient, but was due to the variation of the technic, and although I thought that I was repeating my technic I was not. Formerly I was gaging indirect methods instead of using a direct method of measurement. I feel sure that I have accomplished results with massive doses that I have never been able to accomplish before. If you give repeated small doses in alopecia you run the chance of atrophy. It is like wanting to dissolve a gumma with potassium iodid and giving 5 or 10 grains a day, whereas to accomplish this result it might require 100 grains a day. You must also use massive doses of the Roentgen ray to treat ringworm adequately. I can only point to the results obtained by those who are treating large numbers of children with massive doses and getting good results. The German gynecologists could never have accomplished what they are accomplishing now in the treatment of uterine myomas if they were not bold enough to use the massive dose. Five or even two years ago the exposure of a patient to 1,000 units of the Roentgen ray would have been considered criminal, yet, with proper precautions, desensitizing the skin by such massive doses, it has been possible, for instance, to cause the atrophy of the ovary in several sittings, as in Krause's clinic in Freiburg. In the treatment of myomas the percentage of cures with massive doses is much higher than with fractional ones.

DR. GEORGE E. PFAHLER, Philadelphia: Someone asked me to describe more fully my technic. The technic is described in the body of the paper in more detail. I should like to emphasize one point in deep therapy of all kinds, particularly of sarcoma of the bone: probably the most important single factor to be watched is keeping the tube hard. The operator is apt to let the tube run down after it has been used a minute or two, in which case skin effects instead of bone effects are produced; the very soft rays instead of the hard rays are utilized.

DR. KENNON DUNHAM, Cincinnati: Do you find it necessary to change the tube during a Roentgen-ray treatment?

DR. G. E. PFAHLER, Philadelphia: Whether I change the tube or not depends on the existing instrument. If I use an instrument generating 1 milliampere of current I can use the same tube during the whole treatment. On the other hand, I have used as many as a dozen tubes in a single treatment with the bigger machines. There are a great many points in the technic that have to be adapted to the individual apparatus. I therefore try to stick to principles rather than to give specific details, which will vary with the operator.

THE MINIMIZING OF INSANITY*

MARY LAWSON NEFF, M.D.
FAIRFIELD, IOWA

When we consider that the number of students in all the colleges and universities of the nation is exceeded by the number of patients in our hospitals for the insane; that the annual economic loss is conservatively estimated at $100,000,000, to which may be added one-third as much for actual maintenance; while the burden of sorrow and loss in social and ethical ways cannot be computed, we realize that in seeking to minimize this sad feature of our national life we are considering no small problem in medicine, in sociology, in economics and in philanthropy.

Obviously, the first consideration is, how far is it possible, with our present knowledge of preventive medicine, to decrease this number.

At least from 15 per cent. to 20 per cent. of commitments are attributed to alcohol, and from 10 per cent. to 12 per cent. to syphilis. Such cases are, in theory at least, preventable; and we can fairly hope for a marked decrease in these groups as a result of education. If, however, we consider alcoholism itself as a symptom of the neuropathic make-up, and give some weight to the suggestion that paresis develops only in the subject of syphilitic infection in whom the nervous system forms the line of least resistance, we will be inclined to draw conclusions with some degree of caution.

A small group of cases following acute infections, or due to various forms of chemical poisoning, may be added to those having a known and preventable cause.

The number of patients doomed to unavoidable insanity by heredity is difficult to estimate. Massachusetts gives 21 per cent. of admissions as having "markedly poor heredity." The psychopathic hospital of the University of Michigan reports a hereditary factor in 60 per cent. of admissions.[1] Here we have a problem for eugenics.

And to the statesman we refer the problem of immigration. For the national unwisdom of importing as ancestors of our future citizens aliens who furnish a percentage of insanity twice that furnished by our own people, there is no adjective available.

In the preventable cases of insanity, however, the patients, for the most part, either recover, or live a comparatively short time after commitment; so that, while they constitute perhaps one-third the number of commitments, they contribute only a small part of our permanent institutional population. Hospitals for the insane are filled with the accumulating cases of dementia praecox, of the manic-depressive insanities, and of the large group of unclassified psychoses. The underlying somatic causes which produce mental symptoms in these groups we do not know, and it is idle to talk of prevention, in a strictly medical sense.

Here is a great field for medical study, and the work already done is absurdly inadequate. In bio-chemistry,

* Read in the Section on Preventive Medicine and Public Health of the American Medical Association, at the Sixty-Fourth Annual Session held at Minneapolis, June, 1913.

1. Report for biennial period ending June 30, 1911.

with its problems of metabolism, of auto-intoxication, of anaphylaxis, the field has hardly been touched; and little more can be said of the bacteriology of insanity. Even empirical methods of treatment have not been fairly tried. Who can say what would be accomplished by treating insane patients thoroughly and persistently with open-air life, measured amounts of water, purin-free diet, maximum elimination, and interesting occupations suited to their mental conditions—and combining all these forms of treatment in one question?

When we reflect that every form of insanity with a known cause, is due either to a bacterial or a chemical toxemia, is it not fair to assume that we must look to general medicine for further light on our problem, and to question the psychiatry which is not an integral part of general medicine—especially that which has for its postulate *"Mens insana in sano corpore."*

Bossi[2] has criticized the larger German institutions for the insane because no specialist for internal medicine is included in the staff, and in this respect at least we would do well not to model our American institutions after them.

From the work of the various social agencies we may expect some valuable help in caring for paroled patients, in assisting borderline cases to maintain themselves outside of institutions, and in rendering permanent some recoveries in patients, who, without after-care would not find a safe environment. The "consulting psychologist" may also in time come to be a factor in enabling people of neuropathic inheritance to avoid the dangers of stress.

From the advent of the psychopathic hospital we hope much: yet we cannot ignore the possibility that its various functions as an observation ward, a medical research laboratory, a psychologic experiment station, an institution for the clinical teaching of medical students and a receiving and distributing depot for large numbers of patients, may overshadow its function as a hospital in which real therapeutic work shall take precedence of everything else. The publicity and confusion incident to some of these functions, indeed, make the best kind of therapeutic work difficult. It is interesting to know, in this connection, that the Psychopathic hospital at Syracuse, N. Y., reports that the number of commitments from that county remains stationary, while the population increases. This is not true of the surrounding counties in the same hospital district. It is also interesting to note that 40 per cent. of the patients admitted to this hospital, do not need to be committed to state hospitals. At Ann Arbor the percentage committed is even smaller.

MINIMIZING THE DEGREE OF INSANITY

But there is quite another sense in which insanity can be minimized. We have been considering our problem quantitatively. Let us also consider it qualitatively, and ask the questions, "How far can the degree of insanity be minimized? How much of the mental deterioration to which we have become accustomed could have been prevented?"

As institutions have multiplied and increased in size, they have been compelled to depart farther and farther from the "protected homes" that apparently formed the earlier ideal of care. That inhuman thing that is connoted by the term "institutionalism" has brought about conditions under which none of us could remain normal.

From the following incident my own vital and personal interest in an effort to normalize the life of the insane dated. Passing through a ward where flowers, sunlight, air and pleasant furnishings gave a superficial appearance of comfort, my attention was called to the patients. These were sitting on either side of the corridor in straight rows, interrupted here and there by a potted plant, or by a "sacred" sofa pillow on which human head had never lain. This row, the chairs all alike, and the faces all turned the same way, left nothing to be desired from the standpoint of geometry. With hands folded, often with eyes closed, not one of these people showed any gleam of interest in life. I stopped to speak to a sweet little white-haired woman, saying, "Why don't you people find something to do? Can't you play games, or read aloud, or something? You can at least break up this row, and turn around and talk to each other!" The reply, given in a perfectly colorless voice, was, "We are not allowed to turn around. The matron thinks we look neater sitting this way." Then and there I determined to study my problem from the patient's point of view; and as I studied it thus, there grew a deep conviction that the cruelest thing that comes to these thousands of fellow-beings whose lives are spent shut away from the world, is ennui—the unspeakable ennui of hours and days and months and years, colorless beyond anything we can imagine.

Normal life is largely a series of responses to the three stimuli furnished by necessity, ambition, and the family affections. Kant expressed this when he said: "A man to be happy must have something to work for, something to hope for, and something to love." The institutional patient has no necessity—there is no need for him to earn his daily bread. He has nothing to gain that stimulates hope, no opportunity to improve his condition, or one so trifling that it cannot be called an incentive. He has no loved ones to care for and serve. He is suddenly and effectively cut off from the motives that actually make life, and in this abnormal environment, already abnormal himself, we may expect, and we certainly find, that after a time we have a mental condition that is a blend of the original psychosis and the "psychosis of abnormal living." The patient becomes a sort of human palimpsest, and only the mental archeologist could say how much of that which can be deciphered is of the original writing.

THE REACTIONS TO ENNUI

There are four main reactions to prolonged ennui—reactions that are not an essential part of the insanities, but such as would occur with ourselves if similarly placed. The most common one is apathy—a gradual subsidence into a dull vegetative existence, an "acceptance of cold-storage life," as a superintendent once expressed it, giving to pathos the whimsical garb in which we often clothe it. A second reaction is violence. The patient to whom apathy is temperamentally impossible, finds some outlet for his energy, and some relief from being bored, in breaking a window, or screaming, or giving an attendant a black eye. The "disturbed" patient is more frequently the result of our methods of care than the occasion for them. A third reaction is untidiness. The unoccupied mind centers itself on physical sensations, and picking at the skin, spitting, pulling out hair, and all the familiar habits of the "untidy" ward become fixed. The fourth reaction is the elaboration of delusions, fears and obsessions, until the normal possibilities of the patient are lost in perverted mental activities that obliterate everything else.

The great majority of patients in hospitals for the insane who have not been kept busy and contented will fall into one of these four classes. The problem, then,

2. Wien. klin. Wchnschr., Nov. 21, 1912.

is to find normal stimuli, incentives, rewards, and human reactions for people whose horizon is contracted, and whose mental life is less normal than our own—though no such gulf exists between the sane and the insane as is usually assumed. Only by treating the insane just as we ourselves would wish to be treated, will practical and effective ways of helping them be found. The "normal areas" of the patient's mental life are the ones on which to base his treatment, rather than the abnormal ones.

Since we cannot avail ourselves of the major stimuli of life, we must utilize to the fullest possible extent the minor ones. All forms of self-expression should be developed in an institution, using the play-motive as largely as possible. Play has been truthfully called the greatest educational agency that exists. In normal life years of play precede and prepare the way for work. By the same path the patient with the mental status of a child may best be led to more serious forms of employment. Every method of stimulating ingenuity, inventive ability, aesthetic work, or self-expression of any kind, should be employed. Love of approbation is a fundamental emotion, which is not lost even in marked dementia, and this can always be utilized. Altruism can be developed to a degree surprising to any one who has not actually attempted the work.

I once saw a group of discontented patients transformed by "adopting" an orphan asylum for whom hundreds of little garments were made. In another hospital a society of patients calling themselves "The Helping Hand" spends certain afternoons working for the less fortunate wards—preparing material for the teacher who reeducates deteriorated patients; making hoods and slippers for the tuberculous ward; mittens for the men who shovel snow—acting, in short, like ordinary human beings. Recently a group of patients packed a box for Dr. Grenfell's work in Labrador, taking great pleasure in filling it with articles made by their own hands.

The activities furnished for patients should be as normal as possible in every way, including carefully adapted methods of teaching, a variety of work, liberal provision for recreation, respect for the "personal equation," reward for the work performed, and a "therapeutic disposition of the product." After a patient has done his or her fair share of the institutional work, some part of each day should belong to the patient. Monotonous and unremunerative toil is not therapy. A patient who has always estimated the value of labor in dollars and cents should be allowed the privilege granted to the convict in the more progressive states, of receiving at least some small share of the money value of his labor. If we say to a patient, "You are a human derelict, supported by the state, and all that you can earn belongs to the state," we can hardly expect as a reaction the interest and pleasure that is the essential part of mental therapy.

THE INDUSTRIAL STATUS OF THE INSANE

In an admirable discussion of the rights of inmates of penal institutions, Lyon[3] questions "the assumption that the delinquent has forfeited his industrial status." The assumption that the unfortunate patient with mental symptoms, who is entitled to sympathy instead of discipline, has "forfeited his industrial status" would hardly seem tenable. Prof. C. R. Henderson of the Department of Economics in the University of Chicago, expresses admirably the proper point of view in this regard by saying, "What should be the patient's occupation, and what should be the disposition of his earnings should be determined by medical authority, with sole reference to its effect on his health." As the wide-spread movement in the field of occupational therapy increases, this question of the wise and proper disposition of the products of the patient's industry becomes an increasingly important one. It has been dwelt on at some length because widely varying views are held, and actual cases of transforming what should be a therapeutic measure of the greatest value into a mere exploiting of a defenseless class of people have not been lacking.

The economic gain in transforming the violent patients into tractable ones, the untidy into neat ones, the destructive into productive ones, and the unhappy into happy ones, which follows a well-planned occupation movement, is very great, even where patients are given, as is done in some institutions, all the proceeds from such work as can be sold. In visiting some sixty institutions for the care of the mentally abnormal I have noted repeated examples of this economic value of proper occupation. This is perhaps not of the first importance to the physician, but it is of the greatest assistance to us in seeking the legislation on which we must depend for future advance. One instance recalled was the transforming of four "disturbed" wards, under the supervision of a skilful and devoted physician, into three quiet, cheerful and industrious halls, with a residue of disturbed patients in the fourth hall only. Thirteen nurses now do the work performed before this transformation by seventeen.

In another hospital the occupation department, under a competent teacher and a wise superintendent, is admirably managed in this way. Each patient is asked to do half a day's work for the institution, without reference to whether his maintenance is paid or not, as his share in the community life. The other half day is his own, and in this time opportunity is given to join one of the occupation classes. If a basket is made or a rug woven that sells for a dollar, half of this goes to support the occupation department, in purchasing materials, paying the teacher's salary, etc.; while the other half is credited to the patient. If, however, he has been unwilling to do his share of work for the community, half his earnings go into a special fund for the working patients who are unable to earn a little spending-money. This plan appeals to the patients' sense of fair play, brings about loyalty to the institution and is, in the best sense of the word, economic.

The beginnings already made in this wide-spread movement to provide a life as nearly normal as possible for the insane, and to prevent for the future gratuitous mental deterioration, are so fruitful and encouraging, that we may hope for much greater results within the next few years. What may ultimately be accomplished, no one can yet say, but we may hope soon for a day when the invisible motto now lettered over the door of our hospitals for mental patients, "From him that hath not shall be taken away even that which he hath," shall fade, and the institution for the insane shall be a protected community of people living as normally as possible.

ABSTRACT OF DISCUSSION

DR. PAULINE M. TOWNSEND-HANSON, Marshalltown, Iowa: As a medical student, I spent a summer in the infirmary of the Pennsylvania Hospital. Never have I forgotten, and so long as I am able to be active never shall I forget, the many impressions carried with me from the infirmary of the insane asylum. No system was planned for employment of the patients and, outside of the head nurse, none of the attendants in charge had any preparation for the work. Any one

3. Jour. Criminal Law and Criminology, May, 1912.

who was willing to work could go in and be tried out on the floor, and some of the attendants in the asylum were of a very inferior type. The pay was $15 a month with board and laundry, and attendants who could be secured for $15 a month were inferior in capacity, cultivation and mental development.

Even these inexperienced attendants recognized that a desire for employment on the part of the patient was a hopeful sign of recovery. We encouraged employment as much as possible, but a systematic method with a person trained for it would have done much more. Work was given to the patients as an experiment, but no effort was made toward remuneration. Some of these patients would knit yards of lace, if we would supply the thread. I felt, however, that I had no right to take the labor of the patient without recompense. I shall be glad to support any move that will help to bring about, as soon as possible, the desired change in our state asylums suggested by Dr. Neff.

DR. E. S. EVERHARD, Dayton, Ohio: It seems proper that we discuss the preventive as well as the minimizing side of this question. The point that I wish to bring out is a little different from that brought out in this paper. Before patients are taken to the insane asylum they are in the hands of the general practitioner. In the last year or two I have asked the physicians in charge of several of our insane hospitals what they were learning as to the causes of insanity, and three times I have received the reply: "We can find out nothing about these patients, because we can not get any history. The patient comes to us, often under the care of an ignorant member of the family or a neighbor, with a well-developed case of insanity. Neither the patient nor his attendant is reliable and we can therefore get no history worth considering."

When I asked who was responsible for this, who committed the patients, I received the reply that there was only one physician on the board of commitment and that he did not know the patient, as a rule, and could not get the history. It seems to me that the problem is for the general practitioner, who, sometime during the process of the development of this insanity, has hold of the patient and can get the history. I have asked the men in charge of the hospitals for the insane why they did not start some movement by which they could get the history of these cases, and I received the reply that the general practitioner is not interested. I want to make an appeal for the general practitioner. We are all interested in the things we know about. We do not know how to obtain the general history of the patient in such form that it will be of service to the persons in the hospital who take care of these cases. The experience of the Committee for Public Health Education, which I have been connected with for four years, has been that if you want anything of the general practitioner, and tell him what you want, he is interested. Would it be possible to bring this matter in some way before the general practitioner so that he will know in what way he can best help the hospitals to obtain the history of the patient and to gather those statistics which are necessary in order to make a proper study of the cause and prevention of insanity?

DR. J. N. HURTY, Indianapolis: I have made a superficial study of insanity in our hospitals for the insane to obtain some information in regard to the prevention of this trouble. I have found that 100 per cent. of the patients were great medicine-takers, and it occurred to me that drugs were probably another source of mental poison. I visited the houses of ten insane persons, all farmers' wives, and all were consumers of patent medicine. Alcohol had entered into their insanity, without a doubt, and I do not know to what degree the drugs contained in these patent medicines had affected their cases. Sleeplessness, which, in many instances, is a sign of approaching insanity, had come on them, and for this hypnotics had been prescribed in many cases, and the condition was probably made absolute by these hypnotics. In the light of the investigations made, I conclude that alcohol accounts for fully 25 per cent. of insanity. The effects of constant medicine-taking are also to be considered. Another 25 per cent. seems to be due to syphilis. If alcohol, drugs and syphilis are causes of insanity, we have within our control three important forces which can be checked.

DR. M. P. OVERHOLSER, Harrisonville, Mo.: I wish to emphasize that part of Dr. Neff's paper in regard to the industrial, educational, occupational and diversional treatment of the chronic insane, for I believe that herein lies a most important and yet undeveloped field of work in the treatment and management of a large percentage of the chronic insane confined in our state hospitals. It is true that occupational and various diversional treatment cannot restore that part of the mind which disease has destroyed, but in a large percentage of cases the scraps of a wrecked and shattered mind may be stimulated and reeducated by the vivifying influences of occupation and diversion. We have tried this and know it to be true. Several years ago the legislature of Missouri granted one of the state hospitals a special appropriation for the construction of an industrial building. This building was fitted up so that we were able to place a large number of the patients at work in the manufacture of mattresses, brooms and brushes of various kinds. The women patients are taught to make numerous articles of wear and ward supplies, such as dresses, bonnets, men's shirts and overalls, carpets, rugs, quilts, etc. In addition to this, we added in March, 1912, another department called the art or occupation department, with a woman instructor, who teaches the women patients raffia weaving, brass craft, cross-stitch, French and punch embroidery, crocheting, drawn and hemstitch work, weaving bobbin lace and Navajo and other rugs, making artificial flowers and a number of other things too numerous to mention, to which can be added from time to time new and novel diversions in the way of occupation. The monotony of the occupational treatment is broken every two weeks by a tea party, at which fifty or sixty of the women patients meet in the occupation room dressed in their best gowns and listen to music, play various games or busy themselves with needlework and partake of refreshments. Every four weeks a large number of the patients, male and female, with nurses, attendants, employees and officers, meet in the chapel to play cards, checkers, dominoes, flinch, jack-straws and other games. The beneficial effects of these methods of treatment on the attitude, disposition and general demeanor of many of these patients are remarkable, and I therefore wish to emphasize the importance and necessity of increasing this kind of work in our state institutions for the insane, for I believe that no more powerful therapeutic agent can be found in the treatment of a large percentage of the insane.

DR. S. A. KNOPF, New York: My work with tuberculosis takes me occasionally into insane asylums and I have had occasion to observe some of their peculiar features. I have not made so thorough a study as Dr. Hurty has of the etiology of the disease of these and other unfortunate sufferers from mental affliction. He says that 100 per cent. of insanity is due to drug-taking. This is a very large percentage; I wonder how he came to this conclusion.

DR. J. N. HURTY, Indianapolis: I followed out the cases of ten women and they were drug-takers—patent-medicine takers.

DR. S. A. KNOPF, New York: I believe that the humdrum existence of the farmer's wife in far outlying districts and isolated regions is more responsible for insanity among these poor women than drug-taking. I wish to emphasize what Dr. Hurty says concerning syphilis, but I wish to go a little further. We have many forms of insanity which have never been considered as of syphilitic origin until recently; that is to say, until Noguchi of the Rockefeller Institute found in the brains of many persons who had died in the asylums the organisms productive of syphilis. Antisyphilitic treatment has been inaugurated in many cases with good results in which there were no outward syphilitic symptoms. I am convinced that many of our defective children owe their infirmity to a syphilitic transmission; hence, let us not be afraid, when we are in the presence of the mentally defective child, to apply the Noguchi or Wassermann tests. You will be surprised at the number of times you will find evidence

of a syphilitic transmission. As a measure to diminish insanity among the workers, let us appeal to the employers, the great industrial proprietors, the great philanthropists, to inaugurate a welfare movement among their employees, increasing the hours of rest and recreation. The man or woman constantly doing the same thing for twelve or fourteen hours, six days in the week, and sometimes for six and a half days, is apt to become mentally depressed and even insane. It is this humdrum existence of so many of our industrial employees which leads directly to the insane asylum, or indirectly through alcoholism. Let philanthropists inaugurate also some sort of pleasant diversion among farmers, the toilers of the soil in isolated regions, and insanity among them will diminish. Insanity is as much a social problem as a medical one, and if the social conditions of those liable to become insane are improved their number in the asylums will surely diminish.

DR. A. W. ERSKINE, Cedar Rapids, Iowa: Six years ago it was my privilege to be associated with Dr. Neff in the institution where she first started her work in the normalization of the life of the insane, and I am familiar, therefore, with some of the difficulties of her work and some of the discouragements met. The occupation classes were known from one end of the hospital to the other by nurses, attendants, and, I am sorry to say, a large percentage of the staff, as "booby classes," and ridicule was heaped on them. I appreciate the courage that has permitted this work to be carried on in spite of the ridicule, unjust criticism and opposition that it has had to contend with. I believe that it is due to a few pioneers in this line of work that the care, education and treatment of the insane is gradually being brought out from a chaos of empiricism and put on a rational basis.

DR. BERTHA VAN HOOSEN, Chicago: I want to give a little bit of ancient history and a tribute to Dr. Palmer of the Michigan Insane Asylum at Kalamazoo. Twenty-three years ago I had the pleasure of being one of the assistant physicians in the Kalamazoo Insane Hospital. Whenever Dr. Palmer went to Chicago to buy clothing and materials for the patients, he made it his business to buy as though for individual cases. No patients were allowed to have dresses, shawls, hats, or any article of clothing alike. On the day that he returned, the patients were invited to go and choose their dresses, as they would go to a store. I never saw a patient put under restraint in that hospital.

The patients were all employed in the most natural sort of way. When they were dements and could be taught hardly anything, they were still able to draw the mops across the floor. That was the most practical and simple sort of exercise and employment. The patients also worked in the kitchen, in the dining-room and in the laundry; there was absolutely no department that was not filled with patients and they had a chance to choose the kind of occupation. Every day they were allowed to go out and take exercise; sometimes two and three times a week we had a fine entertainment. Teachers passed into the large chapel in which Dr. Palmer took so much pride; in fact, just after I left, he built a new chapel, in which the rooms were so arranged that the neuroties could be separated from the other patients and yet attend these entertainments, which they of all classes seemed to enjoy most. More than all that, every assistant physician was trained to make it his business to get into the lives of his patients. I had a certain number assigned to me and all the letters from relatives were turned over to me to answer; these letters were inspected by the superintendent and criticized; we had to find out in this way what the patient's home and surroundings were and what the patient's tastes were; in fact, it would take me a long time to tell the number of ways in which the patient was considered as an individual in the Michigan State Asylum so many years ago.

DR. MARY LAWSON NEFF, Fairfield, Iowa: I know that there are hospitals here and there that have always maintained a high grade of humane work. One good point brought out in the discussion is that there are some persons who will remain sane, or stable enough to maintain themselves in society in a certain environment, who will become insane in a different environment. There is a great task for the medical profession in educating these people of neuropathic make-up.

Dr. Everhard spoke of the difficulty of getting a good history. Patients come to an insane asylum often after having been sick for years. They have had headaches, insomnia, mental depression, attacks of rheumatism, gout, neuralgia, eczema, all sorts of symptoms of a gradually increasing toxemia; but the general practitioner who sends them is apt not to take the trouble, or does not consider it important, to send a good history of the patient's physical condition preceding the development of mental symptoms.

This prolonged toxemia would give other indications, especially changes in the kidney. The reports of post-mortem examinations at the State Hospital at Norristown, Pa., were analyzed with the following result: The insanities without assigned cause (below the age of 60) were tabulated for a period of fifteen years. This covered the services of five pathologists. These cases, at necropsy, gave 90 per cent. of chronic interstitial or other form of nephritis. This must mean that we have a tremendous factor of a toxic nature. Many other things point to the same conclusion, and make this early medical history in a case of insanity of great importance.

PRECOCIOUS MENSTRUATION *

F. P. GENGENBACH, M.D.
DENVER

The term "precocious menstruation" should be limited to cases of more or less periodical menstrual discharge occurring in children before its usual appearance at the age of puberty (before the age of 9 or 10 years—Schauta), and should not include cases of hemorrhage from the vagina occurring within a few days after birth and not recurring subsequently.

Precocious menstruation is usually accompanied by signs of precocious maturity, i. e., "the premature development of the whole organism concurrently with menstruation and ovulation" (Morse[1]); or, in other words, "precocious menstruation with an early appearance of the external manifestations of puberty" (Croom[2]). These cases are by far the most interesting, and my case is of that type.

REPORT OF CASE

History.—Baby X., aged at time of examination 2 years (January, 1913). Adopted shortly after birth, at which time a Wassermann proved negative. History of parents unobtainable except that father was a Jew, mother an American. Labor normal. Weight at birth about 6½ pounds.

Bottle-fed, with modified milk. Weight at 1 month, 7 pounds; 2 months, 8¼ pounds; 3 months, 9⅜ pounds. At this time there was a severe gastro-intestinal disturbance with temporary intolerance for cow's milk. A wet-nurse was employed for several weeks, and then a weak milk modification. Weight at 4 months, 10¾ pounds; 5 months, 12 pounds; 6 months, 13⅞ pounds; 7 months, 16⅛ pounds; 8 months, 17½ pounds; 9 months, 21⅛ pounds.

The first tooth erupted at 10 months, at which time the menstrual flow first appeared, lasting three days. The discharge was of bright red blood from the vagina, with slight menstrual odor. At this time the child seemed rather large for its age, but no other signs of precocious maturity were noticed. Menstruation recurred at intervals of from one to three months, most frequently at intervals of six weeks. The child menstruated eight times in fourteen months. For a

* Read in the Section on Diseases of Children of the American Medical Association, at the Sixty-Fourth Annual Session, held at Minneapolis, June, 1913.

1. Morse, John Lovett: Precocious Maturity. Arch. Pediat., 1897, xiv, 241.

2. Croom, J. Halliday: Premature Menstruation. Allbutt's System of Gynecology, 1906.

few days before periods a slight leukorrhea was noticed; the child was rather cross and acted as if in pain. She walked at 17 months after braces had been applied to support the limbs.

First Examination.—Large, well-developed, healthy looking child. Skin dark and hair very curly (Jewish type). Mentally bright for her age. Chest and abdominal examination negative as regards internal organs. Weight 38 pounds; height 37 inches; 17 teeth; circumference of head 19 inches; chest below breasts, 21 inches; across breasts, 22½ inches; abdomen at navel, 22 inches; breasts very prominent, about size of half an orange; nipples well developed, with slight areola; a few hairs around nipples; hair quite noticeable in the axillae, and pubic hair very noticeable; mons veneris and labia very prominent; hymen well developed, the opening admitting the tip only of the little finger, preventing a digital examination of pelvic organs. Rectal examination objected to, and photograph not obtainable.

Second Examination.—Age 28½ months. The child had menstruated four times in four and one-half months. Menstrual flow seemed to be increasing both in quantity and duration, and the peculiar menstrual odor was very marked. The child must wear napkins during a period of about a week. Leukorrhea was increased, being present most of the time. Weight 41½ pounds; height 39 inches; 18 teeth; circumference of head, 19 inches; chest below breasts, 21¼ inches; across breasts, 23 inches; abdomen at navel, 22 inches; pelvis, 23 inches. The breasts were noticeably more prominent, as also the growth of hair under the arms and about the external genitalia.

OTHER CASES

Lenz[3] reports in tabulated form 130 cases of precocious menstruation, dating back over 100 years. In addition to the case just reported I have found the following references to cases apparently not included by Lenz.

Raffaelli[4] reports a case, D. E., aged 4½ years, menstruating for several months, lasting about eight days, preceded by abdominal pains. Height, 1 meter, 10 cm., weight, 19 kg., and average build of a 6-year-old girl. No syphilis, alcoholism or other hereditary disease. Hair in axillae, mammary areola very noticeable, but no enlargement of the mammary glands. Mons veneris prominent and covered with hair about 1 cm. long. Labia very much developed, resembling those of a girl 10 or 12 years old. Hymen well developed and the opening therein permitting introduction of tip of little finger. No evidence of pelvic tumors.

In his article Raffaelli refers to the bibliography on the subject in the work on Children's Diseases by Grancher and Comby. He also refers to a number of similar cases, most of which are included in Lenz's tabulation. The apparent exceptions are as follows:

Reim: The case of a girl 6 years old, who menstruated at 5 years; physical signs of puberty of a girl 13 or 14 years old. Abdominal examinations revealed presence of an ovarian cyst.

Woodruff[5] reports a case of a girl 6 years and 2 months old who menstruated at the age of 2 years. She was developed, apparently, like a girl of 12 to 14 years.

Barband and Lefevre[6] report a case of Puech of a girl who menstruated at the age of 4 years. When 8 years old she had sexual intercourse and miscarried at three months.

Dotti[7] at the meeting of the Tuscan Pediatric Society in 1908 presented three cases of 8, 3 and 2 years. These three cases were the only cases noticed out of 6,000 patients during a period of two years at the Pediatric Clinic, Florence, Italy. In one of the three cases the important factor was a suspicion of hereditary syphilis (premature birth, mother advanced in years). In all three the general body development was above the average, with psychic deficiency. One of the girls had a marked development of the thyroid.

In the discussion of Raffaelli's case, Professor Mya cited a case of precocious puberty seen by him in a girl 4 years old, and Dr. Funaro, a case of precocious menstruation that he had seen at the Charité in Berlin, in a girl of 5 years. It is possible that this is the same case seen by me at the orthopedic clinic of Professor Hoffa in 1908, at which time the following notation was made:

> Girl nearly 5 years old has menstruated almost regularly since 7 months old. Precocious physical development first noticed when about 1 year old, and from that time has grown very rapidly. Breast, pelvis, external genitalia and body growth that of a girl 10 or 12 years old. Hair in axillae and pubic hair very noticeable. Intelligence about normal for age. Comes to clinic for left-sided coxitis. Cast applied.

Raffaelli observes that "Many of the cases present pathological conditions such as tumors, abnormal development of the thyroid, suspicion of hereditary syphilis, rickets, obesity, hydrocephalus, adenoids, psychic deficiency, etc." He further observes that "According to some authorities, beside the climate, the altitude, the proximity of the sea, country or city life, the social condition, the color of the hair, the mode of living, education and race would seem to have a certain influence on menstruation; in fact, it is proved that the Jewesses menstruate before many other women (the Slavs for instance) who live in the same climate."

The fact that these cases are a source of embarrassment and worry to the parents, as well as to the children themselves when they become old enough to appreciate their condition, ought to be reason enough to bring up the question whether anything can be done to control the condition. Glynn[8] refers to two remarkable instances of sexual development in children with a tumor of the ovary (Lucas[9]) and of the testicle, respectively, in whom "The former childlike appearance returned after the removal of the tumor." He also refers to seventeen examples of sex abnormalities in children associated with adrenal hypernephroma verified post mortem, the abnormality in most of the cases being of the type of precocious maturity. He further speaks of the relationship of the pituitary gland to the adrenal gland and sex characters; also of the pineal gland and sex characters. Thus he says "tumors in the pineal region, though rare, are occasionally, like those of the adrenal, associated with changes in sex characters, particularly true precocious sexual development.

Congenital hypertrophy of the pituitary gland is frequently associated with giantism and congenital hyposecretion with infantilism (Glenn[10]). There is probably

3. Lenz, J.: Vorzeitige Menstruation, Geschlechtsriefe und Entwicklung, Arch. f. Gynäk., 1913, xcix, 67.
4. Raffaelli, G.: Un caso di mestruazione precoce, Estr, dall' Osp. d. Lambini di Milano, 1912, No. 1; Abstr. Brit. Jour. Child. Dis., 1912, ix, 235.
5. Woodruff, E. G.: Case of Unusually Early Menstruation. Med. Rec., 1896, xlix, 338.
6. Barband and Lefevre: Essai sur la puberte chez la femme, Paris, 1897; Quoted by Raffaelli (see note 4).
7. Dotti: Riv. di clin. Pediat., Maggio, 1908; Quoted by Raffaelli (Note 4).
8. Glynn, E. E.: The Adrenal Cortex, Its Rests and Tumors: Its Relation to Other Ductless Glands, and Especially to Sex, Quart. Jour. Med., 1911-1912, v, 186.
9. Lucas, C. R.: Tumor of the Right Ovary in a Child Aged 7 Years Associated with Precocious Puberty, Tr. Clinical Soc., London, 1887-1888, xxi, 224.
10. Glenn, T. H.: Internal Secretions, Denver Med. Times, May, 1913, p. 533.

also some relationship between the ovaries and the thyroid gland.

Since these cases of precocious menstruation and precocious maturity are, undoubtedly abnormal and probably pathological, I would like to leave with you for discussion and for future thought the question whether it is permissible to administer experimentally some remedy, perhaps some glandular substance, to counteract this tendency to precocious development.

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THE USE OF BLOOD-AGAR IN THE ROUTINE EXAMINATION OF MILK SEDIMENTS *

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With the ever-increasing evidence of the relationship between milk and the spread of various infections with members of the streptococcus group, methods for their detection in milk and for distinguishing the different types present have been devised.

The direct examination of the stained sediment, originally employed as a means of discovering inflammation of the udder, has been used in an attempt to separate pathogenic and harmless streptococci. Thus, Lewis[1] differentiates these organisms according to the length of the chain and irregularities in the size of the individual cocci. Ruediger,[2] however, believes that these are unreliable grounds of distinction, while Heinemann,[3] Miller,[4] Hiss and Zinsser[5] and Jordan[6] all state that it is impossible to differentiate with any certainty nocuous from innocuous types. Surely it may be stated that the bacterioscopic method is unsatisfactory for this purpose.

Attempts have also been made to distinguish between varieties of the streptococcus by the agglutination test, but these, too, have been failures, heterologous strains often reacting better than homologous.

Following the discovery of Schottmüller[7] that *Streptococcus pyogenes* grows as small hemolytic colonies on blood-agar, this medium has been used to separate the members of the group. The results seem to have varied somewhat; thus, Müller[8] often found milk streptococci as hemolytic as *Streptococcus pyogenes*. Ruediger,[2] on the other hand, studied thirty-five strains of streptococci obtained from milk and concludes that *S. lacticus* can be distinguished from *S. pyogenes*, as the former grows in the form of green colonies with little or no hemolysis.

My first experience with the use of blood-agar in the examination of milk was in the course of the bacteriologic study of an outbreak of septic sore throat. In this investigation the milk sediments were first examined microscopically for pus and streptococci, and those samples that were considered suspicious were centrifuged in quantities of 50 c.c. each and the sediments inoculated subcutaneously into white mice. On the death of the mice, cultures were made from various organs, blood-agar plates being used except in a few instances. In this way I was able to isolate from twenty-three animals 11 strains of *Diplococcus pneumoniae*, one *S. pyogenes* and one *S. epidemicus*. I obtained these two types of the streptococcus, together with the pneumococcus, from one mouse. These organisms were subjected to a thorough cultural study and were found to correspond in all their essential characteristics to the descriptions given of these bacteria.

The work of Ruediger[2] suggested the possibility of still further safeguarding a milk-supply by the use of blood-agar plate-cultures. Following up this idea, eighty-six such examinations have been made. The work so far has been limited to an investigation of the sediment of pasteurized milk and of one which meets all the requirements of a certified milk.

In all cases 50 c.c. of milk were centrifuged from forty-five to sixty minutes, the sediment was mixed with 1 c.c. of sterile physiologic salt solution, and a platinum loopful of this was then inoculated on a blood-agar plate. With a sterile bent glass rod the fluid was rubbed over the surface of the inoculated plate and another one, and the two Petri dishes were placed in the thermostat. After twenty-four and forty-eight hours' incubation they were examined for the presence of colonies characteristic of the members of the streptococcus-pneumococcus group. If present such colonies were picked and their cultural properties studied.

In this way eight organisms have been isolated from seven samples of milk. Four of these were cultures of *S. lacticus;* the colonies of each of these strains were greenish and three of them showed a very narrow zone of slight hemolysis.

Three were pneumococci, these micro-organisms growing as greenish colonies resembling blistered paint. Two strains were pathogenic for white mice. The eighth was a culture of *S. pyogenes;* the colonies were not green and were surrounded by a distinct zone of hemolysis. This streptococcus was pathogenic for white mice.

This streptococcus was not isolated from pasteurized milk, but from the milk of the other dairy previously mentioned. In this case the source of contamination was discovered to be one cow in the herd, which, though showing no physical evidence of udder inflammation, was nevertheless secreting milk containing large numbers of these streptococci. This cow was immediately eliminated from the herd.

The meager number of examinations made precludes the drawing of any conclusions. The results, however, have been sufficiently satisfactory to warrant a continuation of this work. Thus far only pasteurized milk, with one exception, has been examined, but in the future these examinations will be extended to raw milk which microscopically shows excessive numbers of streptococci.

* Read in the Section on Preventive Medicine and Public Health of the American Medical Association, at the Sixty-Fourth Annual Session held at Minneapolis, June, 1913.

1. Lewis: Jour. Am. Pub. Health Assn., 1911, i, 778.
2. Ruediger: Am. Jour. Pub. Health, 1912, ii, 107.
3. Heinemann: Jour. Infect. Dis., 1906, iii, 173.
4. Miller: Bull. 56, Hyg. Lab., U. S. P. H. S., p. 491.
5. Hiss and Zinsser: Text-Book of Bacteriology, 1910, p. 688.
6. Jordan: General Bacteriology, ed. 3, 1912, p. 503.
7. Schottmüller: München. med. Wchnschr., 1903, i, 849.
8. Müller: Arch. f. Hyg., 1906, lvi, 90.

The Reporting of Diseases.—Physicians are occasionally heard to express impatience with the requirements of the law in regard to the reporting of communicable diseases to health authorities. It is obvious that such physicians have given little thought to their responsibilities in safeguarding the public health. Health authorities are ready to attack communicable diseases in their incipiency. Scientific knowledge of the more serious of such diseases has led to the adoption of adequate means of controlling them. But health authorities cannot act blindly. They must deal with the individual case and to do this they must know its location and the circumstances connected with it. It is the duty of physicians to furnish this important information. There can be little question as to the moral responsibility of a physician for the secondary cases resulting from an unreported primary case or for the consequent fatalities.—*Bull. Ohio State Board of Health.*

Therapeutics

THE OPIUM AND MORPHIN HABIT

There are so many legitimate and so many illegitimate "cures" for this habit, that a review of the opinions of a man who has had a large experience in the treatment of these conditions is of value. Dr. George E. Pettey[1] of Memphis, Tenn., has recently presented a book which is well worth careful reading and review.

This article embodies Pettey's ideas of the pathology and the treatment of these drug addictions, which are apparently becoming more and more frequent. He says that the average Caucasian will develop an addiction to opium or one of its alkaloids after thirty days' daily use, and but few of these persons will be able to stop the use of the drug after that length of time by their own efforts. If the drug has been used for three months or more, he finds it almost impossible for the person to stop its use without medical aid.

Crude opium and laudanum taken by the mouth are more slowly absorbed than the alkaloids of opium, and the narcotic impression is less; consequently they may be taken longer than the alkaloids without causing an addiction. Pettey finds also that morphin may be used for a longer time without causing the habit when taken by the mouth than when taken hypodermically. Codein and heroin may be taken for a longer time than morphin without causing the habit, he thinks, because they inhibit secretions less and cause less intestinal toxemia, and therefore less self-poisoning. Of course, it is well known that any narcotic drug may cause a habit if taken for a longer or shorter period, but he recognizes, as has been observed by many medical men, that any of the atropin series may cause a habit, whether it be belladonna, atropin, scopolamin or any other drug that contains a member of the atropin series. In other words, it should be recognized that a person taking morphin and atropin in combination acquires the atropin habit as well as the morphin habit. This is not generally understood.

SYMPTOMS OF THE OPIUM HABIT

The contraction of the pupil is, of course, observed by all, and its inability to dilate properly when light is excluded is well known. Those persons who have the opium habit in any form are usually exhilarated soon after the drug is taken and then depressed later as the effects of the drug pass off. This variability of mood, which perhaps changes several times during a day, is therefore very characteristic, and should place the person under suspicion. During this period of depression the drug habitué is likely to retire to a place where he can administer or take the drug without observation, and he returns, after a time, more or less normal or elated. Some persons in a certain length of time after the drug has been taken become very drowsy and almost sleep while talking. This condition is likely to follow the more or less alert phase. Some persons have a great deal of itching from the drug, especially a tickling or itching of the nose. Others sneeze at the time the action of the drug is passing off, and the sneezing will be inhibited when they take another dose.

Pettey thinks that an indication that a person is taking cocain as well as morphin is that he walks rapidly and in a zigzag manner, shows great nervousness and fidgetiness, is excessively talkative, and has a variable appetite, sometimes eating enormously and again not eating at all. When a patient is excessively restless and moves constantly he thinks that it shows the atropin combination with morphin, and patients who increase the morphin and also the atropin are likely to suffer from insomnia. He also notes that if the atropin is removed in such a morphin-atropin addiction the ordinary dose of morphin causes extreme nausea. In other words, such a patient suffers from the morphin without the atropin.

Pettey thinks it inexcusable to cause the symptoms usually attendant on the gradual reduction of morphin. He also finds it inexcusable to withdraw the opiate abruptly, unless the patient is first prepared for such treatment. Such harsh treatment is not likely to cure a patient permanently. He is also firmly convinced that the more thoroughly the system is cleansed of toxic matter, that is, prepared for the treatment of the withdrawal of the drug, the less fever there will be and the less neuralgic pain.

Pettey believes strongly in the necessity of reducing the toxins in the system, not only those caused by the drug, but also those produced in the intestines owing to the action of the drug; and he believes that these toxins accumulate in the system mainly because there is deficient excretion. This insufficient excretion is largely due to the fact that the intestines are so seriously affected by the narcotic, in their secretions, muscularly, in their nervous supply and in all their nerve centers. He is convinced, therefore, that no ordinary simple catharsis is sufficient, but that not only should the intestines be thoroughly emptied, but that the secretions, also, should be started if possible, the peristalsis activated and the circulatory and motor nerve centers, if possible, stimulated. He therefore administers a combination of drugs that will promote all of these desired effects, and he finds that, if the nerve centers are not at the same time stimulated, the cathartic drugs will cause pain and disturbance without efficient evacuation of the bowels. Pettey also believes that the cardiac depression caused by withdrawing morphin or some other form of opium is largely due to portal and liver congestion. Such congestion, of course, is well known to interfere with cardiac efficiency; or the reverse, which is so generally understood, that cardiac insufficiency will cause portal congestion. If, therefore, he can relieve portal congestion and liver obstruction, he finds that the circulation misses the morphin less.

A general hyperesthesia or hypersensitiveness follows the withdrawal of an opiate from the habitué, and this of course he points out as the natural reaction from a more or less chronic anesthesia due to the drug. He finds this hyperirritability in all parts of the body, evidenced not only mentally and nervously, but also functionally.

The suffering always attendant on the withdrawal of the opiate can be prevented by previous thorough elimination and the administration of scopolamin. The proper use of scopolamin for the few days it is required will relieve pain, induce sleep and prevent the distressing nervous symptoms due to the withdrawal of the opiate. Pettey finds that with this treatment in two or three days after the withdrawal of the opiate there is no craving or desire for the drug, the appetite returns, the patient will sleep many hours at a time, and convalescence becomes rapid.

"The dose of scopolamin ranges from 1/300 to 1/50 grain at intervals of from thirty minutes to six hours, depending on the individual." Of course the smaller doses should at first be administered until the tolerance of the patient is determined. The frequency is deter-

1. Pettey, George E.: The Narcotic Drug Diseases and Allied Ailments, F. A. Davis Company, Philadelphia.

mined by the production of sleep and the freedom from pain. After this condition is produced the drug should be given at such intervals only as are necessary to keep the patient comfortable. In the use of this drug the patient should always be individualized. There is, and can be, no rule as to the dosage or the frequency, but the withdrawal of the opiate should not be allowed to cause suffering, and this drug will prevent it.

PREPARATION OF THE PATIENT

The patient should first receive some hydrotherapeutic treatment, the intensity of which is determined by the patient's strength, perhaps only a tub-bath, followed by a vapor-bath. He should be made to drink a large amount of water in order to wash out all surplus metabolic products that it is possible to eradicate by the urine; but it should be remembered that bile and bowel-discharges are nine times as toxic as the urine, and that urine is fifty times as toxic as the perspiration (Bouchard), and that the principal elimination of toxins, must therefore be from the bowels, and purgation is of primary importance. The cathartic combination found most valuable by Pettey is the following:

℞ Calomel .....
Powdered extract of cascara.....ãã gr. x
Ipecac .....gr. i
Strychnin nitrate .....gr. 1/4
Atropin sulphate .....gr. 1/50
M. et fac capsulas 4.

Sig.: One capsule every two hours until four are taken, preferably at 4, 6, 8 and 10 p. m., and only after having abstained from dinner and supper on the day on which they are taken.

The treatment may be begun at 4 p. m. with one capsule; the last dose is given at 10 p. m. The patient receives his opiate in his usual dose up to 8 or 10 p. m., but none from that time until after the bowels have thoroughly moved the following morning. Pettey thinks it is advisable that six or eight hours after the last capsule has been given, namely, at 10 p. m., the patient should receive 1/20 grain of strychnin hypodermically, this to be followed half an hour later by 2 ounces of castor oil or a bottle of citrate of magnesium. "Both the strychnin and the oil or saline should be repeated at intervals of two hours until the intestinal canal has been thoroughly emptied." The patient receives no morphin or narcotic during this period. When he has gone as long as he can without discomfort and begins to feel the need of the drug, it should be given him in reduced doses, and it will generally be found that two-thirds of the usual dose perfectly satisfies his system. This reduced quantity should be given at the same intervals at which the patient has been having his morphin before the treatment was begun. After purgation is completed, the patient may be allowed a liberal diet until within six or eight hours of the time of giving the next course of purgative. Forty-eight hours from the time of the first purgative course the second course should be given, consisting of the same ingredients. As stated before, after the first purgative action the patient should receive his morphin in as small doses as will keep him comfortable up to the time of his evening or bedtime dose on this the second day, but he should receive no morphin or other opiate after taking the last purgative capsule of the second course. Again, six or eight hours after taking the last purgative capsule he should again receive his strychnin and his oil or saline, and this dose should be repeated until free bowel movement has been obtained. During this time the patient should be given a bath and put to bed. After this purgation and the elimination of the toxins that it causes he will be able to go much longer before he has the desire for the narcotic, especially if he remains in bed, which should be insisted on. In six or eight hours, however, after the usual time for his morning dose he will begin to require something for his relief. At this time instead of being given the opiate, he is given scopolamin in 1/200-grain doses, hypodermically, and the same dose is repeated in thirty minutes. Ordinarily a patient will go to sleep in half an hour after the second dose. If he does not, and still complains of discomforts, the third dose of the same size should be given. If he is not uncomfortable, however, he should not receive the third dose until an hour after the second dose. At the end of that time, however, he should receive a third dose. This dose, in patients who are not uncomfortable, may be of the same size or increased in size, depending on the amount of impression produced by the other doses. Of course, a patient may be susceptible to the action of scopolamin, or he may be tolerant to it, but if he is poisoned slightly by it (belladonna poisoning) he will not suffer from the need of his morphin.

The patient should be allowed to sleep from six to eight hours, unless he awakens before, but when he does awake, no matter how comfortable he may be, he should receive another dose of scopolamin, generally 1/200 grain. The amount is regulated by the susceptibility of the individual. This drug is then repeated at such intervals as are required to keep up a mild belladonna intoxication and keep the patient free from pain. He may sleep, or he may not.

This treatment with scopolamin should be continued for from thirty-six to forty-eight hours from the time of beginning the remedy and then stopped.

Pettey believes it generally advisable during the time of the administration of scopolamin to give 20 grains of sodium thiosulphate (sodium hyposulphite) every two hours for twenty-four hours or more (of course provided the patient is not comfortably sleeping), finding that this drug supplements the effect of the calomel purge and will cause bilious stools unattended by colic or griping.

At the end of the fifth or sixth day the patient is convalescent, and has no desire for the drug to which he is addicted, although, of course, he is weak and will miss the support of his usual stimulant. "The usual symptoms attendant on the withdrawal of morphin are not present, such as diarrheas, disturbed heart, nerve-pains, muscle-aches, nervousness and flushings, and the patient can lie comfortably in bed and take and enjoy his nourishment."

If the heart-action is deficient during this treatment, spartein sulphate in doses of 2 grains at intervals of from four to six hours is the medication Pettey advises.

The convalescence should be protracted; namely, from one to two months should be spent under the direct supervision of the physician, preferably in an institution accustomed to treat such patients. The after-treatment from the period just described on to complete health is the usual one for neurasthenics, namely, food, rest, physical treatments and more or less exercise.

Patients thus treated have a short convalescence, gain in weight, sleep well and are not injured by the ordeal of the withdrawal of the drug.

The convalescent patient should receive no drugs, unless there is some specific reason for administering them. Alcohol should be absolutely withheld. The same is true of strychnin. Alcohol is followed by depression, and its dulling effect on the nervous irritability is only short-lived. As previously stated, the nervous system is hyperesthetic after the withdrawal of the

narcotic, and to stimulate it continuously with strychnin is a mistake.

If the heart-action becomes weak during the treatment, Pettey advises the use of spartein sulphate, 1 to 2 grains, hypodermically, every four to six hours. He finds that this drug acts better in sustaining the circulation after the withdrawal of morphin than any other drug.

Pettey discusses the large doses of strychnin which he advises, and finds that the larger the daily dose of morphin the more strychnin will be required to wake up the inert nerve-centers and to cause satisfactory catharsis and nutritional activities, and he is sure that failure to use sufficiently large doses of strychnin has sometimes caused failure in complete evacuation of the intestines and complete elimination of toxins.

Pettey discusses the use of scopolamin, and even goes so far as to state "that its relationship to the treatment of morphinism is the same as the relationship of ether to surgery." In other words, it inhibits pain and suffering.

We have long maintained[2] that some member of the atropin series was always used in the successful treatment of morphinism. Which particular form of the atropin group is to be used has varied with the different specialists in this line, but undoubtedly scopolamin offers the desired antagonistic effect to the morphin; namely, it causes nervous stimulation through its atropin constituent while at the same time it causes mental quietude as other forms of the atropin group do not.

Pettey finds that pregnancy is no bar to his treatment for the morphin habit, although he would take a longer time in the preparation of the patient for the withdrawal of the drug. He finds that scopolamin will arrest uterine activity.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT, SO FAR AS KNOWN, IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

DIGIPURATUM AMPULES.—This dosage form of an accepted proprietary article has been accepted.

Each ampule contains 1 Cc. of a digipuratum solution, faintly alkaline and isotonic with the body fluids, equivalent to .1 gram (1½ grains) digipuratum.

DIGIPURATUM SOLUTION FOR ORAL USE.—This dosage form of an accepted proprietary article has been accepted.

Vials containing 10 Cc. digipuratum solution, each Cc. representing .1 gram (1½ grains) of digipuratum. The solution for oral use must not be given hypodermically.

TETANUS ANTITOXIN (See N. N. R., 1913, p. 218).

H. M. Alexander and Co., Marietta, Pa.

Tetanus Antitoxin.—This product is concentrated and refined according to the method of Banzhaf. It is standardized under the method approved by the Hygienic Laboratory of the United States Public Health Service. Marketed in a syringe containing 1500 units—a single immunizing dose.

ACNE VACCINE (See N. N. R., 1913, p. 221).

Lederle Antitoxin Laboratories, New York City. (Schieffelin and Co., New York.)

Acne Vaccine.—This product is marketed in five syringes containing respectively 5 million, 10 million, 20 million, 40 million and 100 million killed acne bacteria. Also marketed in four packages of two vials, each containing 5 million, 10 million, 20 million and 40 million killed bacteria. Also marketed in 20 Cc. vials in four strengths, 1 Cc. containing respectively 5 million, 10 million, 20 million and 40 million acne bacilli.

BACILLUS BORDET-GENGOU VACCINE.

Lederle Antitoxin Laboratories, New York City. (Schieffelin and Co., New York.)

Pertussis Vaccine.—This product is marketed in four syringes containing respectively, 25 million, 50 million, 100 million and 200 million killed Bordet-Gengou bacilli. Also marketed in four packages of two vials, each containing 25 million, 50 million, 100 million and 200 million killed bacteria. Also marketed in 20 Cc. vials in four strengths, 1 Cc. containing respectively 25 million, 50 million, 100 million and 200 million pertussis bacteria.

MENINGOCOCCUS VACCINE (See N. N. R., 1913, p. 223).

Lederle Antitoxin Laboratories, New York City. Schieffelin and Co., New York.)

Meningococcus Vaccine.—This product is marketed in a package containing three syringes: syringe 1 containing 500 million killed meningococci, while syringes 2 and 3 contain each 1 billion killed meningococci. The contents of these syringes should be injected subcutaneously at intervals of ten days. Also marketed in a package containing three vials: vial 1 containing 500 million and vials 2 and 3 containing each 1 billion killed meningococci.

BACILLUS COLI VACCINE (See Jour. A. M. A., May 10, 1913, p. 1461).

Lederle Antitoxin Laboratories, New York City. (Schieffelin and Co., New York.)

Coli Vaccine (Polyvalent).—Marketed in 20 Cc. vials in four strengths, 1 Cc. containing respectively 50 million, 100 million, 200 million and 400 million killed bacilli.

GONOCOCCUS VACCINE (See Jour. A. M. A., May 10, 1913, p. 1461).

Lederle Antitoxin Laboratories, New York City. (Schieffelin and Co., New York.)

Gonococcus Vaccine (Polyvalent).—Marketed in 20 Cc. vials in four strengths, 1 Cc. containing respectively 50 million, 100 million, 200 million and 400 million killed gonococci.

PNEUMOCOCCUS VACCINE (See Jour. A. M. A., May 10, 1913, p. 1461).

Lederle Antitoxin Laboratories, New York City. (Schieffelin and Co., New York.)

Pneumococcus Vaccine (Polyvalent).—Marketed in 20 Cc. vials in four strengths, 1 Cc. containing respectively 50 million, 100 million, 200 million and 400 million killed pneumococci.

STAPHYLOCOCCUS VACCINES (See Jour. A. M. A., May 10, 1913, p. 1461.

Lederle Antitoxin Laboratories, New York City. (Schieffelin and Co., New York.)

Staphylococcus Vaccine (Polyvalent).—Marketed in 20 Cc. vials in four strengths, 1 Cc. containing respectively 250 million, 500 million, 1 billion and 2 billion killed staphylococci.

Staphylococcus Albus Vaccine (Polyvalent).—Marketed in 20 Cc. vials in four strengths, 1 Cc. containing respectively 250 million, 500 million, 1 billion and 2 billion killed staphylococcus albus.

Staphylococcus Aureus Vaccine (Polyvalent).—Marketed in 20 Cc. vials in four strengths, 1 Cc. containing respectively 250 million, 500 million, 1 billion and 2 billion killed staphylococcus aureus.

STREPTOCOCCUS VACCINE (See Jour. A. M. A., May 17, 1913, p. 1541).

Lederle Antitoxin Laboratories, New York City. (Schieffelin and Co., New York.)

Streptococcus Vaccine (Polyvalent).—Marketed in 20 Cc. vials in four strengths, 1 Cc. containing respectively 50 million, 100 million, 200 million and 400 million streptococci.

TYPHOID VACCINE (See Jour. A. M. A., May 17, 1913, p. 1541).

Lederle Antitoxin Laboratories, New York City. (Schieffelin and Co., New York.)

Typhoid Vaccine.—Marketed in 20 Cc. vials in four strengths, 1 Cc. containing respectively 100 million, 250 million, 500 million and 1 billion killed typhoid bacilli.

2. The Drug Treatment of Alcohol, Morphin and Cocain Habitués, Therapeutics, THE JOURNAL A. M. A., March 5, 1910, p. 794.

MEDICAL COLLEGES OF THE UNITED STATES

ANNUAL PRESENTATION OF EDUCATIONAL DATA BY THE COUNCIL ON MEDICAL EDUCATION

Below are given brief descriptions of the medical colleges in the United States and Canada that are legally chartered to teach medicine, several of which do not grant degrees. The name, address, year of organization, history and date when first class graduated are given in each instance. Unless otherwise stated, a class graduated each subsequent year. Where official reports have been received from the college, information regarding faculty, entrance requirements, length of term, fees, students (excluding specials and postgraduates) graduates, name of dean and next session is given without discrimination, regardless as to whether the college is sectarian or not. In a few instances in which such reports were not received the information published is from other reliable sources. Figures for graduates include all who graduated since July 31, 1912. Extracts of rules and the membership of the Association of American Medical Colleges are shown following the list of colleges. Figures showing population of cities and states are taken from the United States Census Bureau's returns for 1910.

ALABAMA

Alabama, population 2,138,093, has two medical colleges, the Medical Department of the University of Alabama and the Birmingham Medical College, located, respectively, in Mobile and Birmingham. The population of Mobile is 51,521 and of Birmingham 132,685.

Birmingham

BIRMINGHAM MEDICAL COLLEGE, Avenue F and Twentieth Street. Chartered in 1894. The first class graduated in 1895. In 1913 became the Graduate School of Medicine of the University of Alabama. There are 25 professors and 15 assistants, total 40. The course of undergraduate instruction now embraces two sessions of eight months each. Only juniors and seniors will be enrolled. When then two classes have graduated, the college will cease to do undergraduate teaching. The fees are $105 for the third year and $130 for the fourth. The Secretary is Dr. E. P. Hogan. Registration, 1912-1913, 102; graduates, 28. The twentieth session begins Oct. 1, 1913, and ends May 21, 1914.

Mobile

UNIVERSITY OF ALABAMA SCHOOL OF MEDICINE, St. Anthony and Lawrence Streets.—Organized in 1859 as the Medical College of Alabama. Classes were graduated in 1861 and in all subsequent years except 1862 to 1868, inclusive. It was reorganized as the Medical Department of the University of Alabama in 1897. All property was transferred to the University of Alabama in 1907, when the present title was assumed. After Jan. 1, 1914, one year and, for the session of 1915-16, two years of college work will be required for admission. The faculty consists of 14 professors and 43 lecturers and assistants, a total of 57. The course of study covers four years of thirty-two weeks each. The total fees for each of the four years, respectively, are $150, $145, $145 and $165. The Dean is Dr. Eugene D. Bondurant. The total registration for 1912-13 was 115; graduates, 21. The forty-eighth session begins Sept. 22, 1913, and ends May 28, 1914.

ARKANSAS

Arkansas, population 1,574,449, has one medical college, the Medical Department of the University of Arkansas, located in Little Rock, a city of 45,941.

UNIVERSITY OF ARKANSAS MEDICAL DEPARTMENT, Second and Sherman Streets.—Organized in 1879 as the Medical Department of Arkansas Industrial University. It assumed the present title in 1899. In 1911 the College of Physicians and Surgeons united with it and the new school was made an integral part of the University of Arkansas. The first class graduated in 1880. The faculty consists of 17 professors and 34 lecturers and assistants, total 51. The course of study covers four years of thirty-two weeks each. The fees are $125 for each of the first three years and $150 for the fourth year. The Dean is Dr. Morgan Smith. Total registration, 1912-13 was 110, graduates 32. The thirty-fifth session begins Sept. 15, 1913, and ends May 14, 1914.

CALIFORNIA

California, population 2,337,459, has eight medical colleges. Four are located in San Francisco, a city of 416 912 inhabitants. They are Leland Stanford Junior University College of Medicine, Medical Department of the University of California, Hahnemann Medical College of the Pacific and the College of Physicians and Surgeons. The College of Physicians and Surgeons and the California Eclectic Medical College and the Los Angeles Clinical Department of the University of California are situated in Los Angeles, population 319,198. The Oakland College of Medicine and Surgery is in Oakland, population 150,174. The College of Medical Evangelists is located at Loma Linda, a village of 110 people.

Berkeley-Los Angeles-San Francisco

UNIVERSITY OF CALIFORNIA MEDICAL DEPARTMENT. University Campus, Berkeley; Second and Parnassus Avenues, San Francisco, and Buena Vista and Alpine Streets, Los Angeles.—Organized in 1863 as the Toland Medical College. The first class graduated in 1865. In 1872 it became the medical Department of the University of California. In 1909 the College of Medicine of the University of Southern California, at Los Angeles, by legislative enactment, became a clinical department. Two years of collegiate work are required for admission. The work of the first two years is given at Berkeley and the work of the last two years at both Los Angeles and San Francisco. Of the *Berkeley-San Francisco* portion the faculty is composed of 14 professors and 42 associates and assistants, a total of 56. The course covers four years of nine months each. Fees for the four years respectively are $165, $175, $160 and $160. The Dean is Dr. Herbert C. Moffit, San Francisco. Total registration for 1912-13 was 104; graduates 8. The forty-first session begins Aug. 18, 1913, and ends May 15, 1914. *Los Angeles Clinical Department.* The faculty has 30 professors and 31 associates and assistants, a total of 61. The two clinical years only are given. The Dean is Dr. W. Jarvis Barlow, Los Angeles. Total registration 1912-13, 7; graduates, 4. The next session begins Aug. 22, 1913, and ends May 15, 1914.

Loma Linda

COLLEGE OF MEDICAL EVANGELISTS.—Organized in 1909. The faculty numbers 11. The course extends over five years of nine months each, but includes a study of the Bible and evangelistic training—non-medical subjects. The total fees each year are $111; matriculation fee, $5, payable but once; graduation fee, $10. The Dean is Dr. George Knapp Abbott. The total registration for 1912-13 was 62; no graduates. The fifth session begins Sept. 18, 1913, and ends June 17, 1914.

Los Angeles

COLLEGE OF PHYSICIANS AND SURGEONS, 516 East Washington Street.—Organized in 1903, first class graduated in 1905; became Medical Department, University of Southern California August 11, 1909. The course covers four years of nine months each. The faculty consists of 15 professors and 44 associate professors, lecturers and instructors a total of 59. The fees for the four years respectively are $160, $157, $155 and $182. The Dean is Charles W. Bryson, Delta Building, Los Angeles. The registration for 1912-13 was 125, graduates 26. The next session begins Sept. 10, 1913, and ends June 11, 1914.

CALIFORNIA ECLECTIC MEDICAL COLLEGE, 846 Lyon Street.—Organized in 1879 at Oakland as the California Medical College. Removed to San Francisco in 1887. Suspended in 1906. Reorganized at Los Angeles with the present title in 1907. Classes were graduated in 1880, and in all subsequent years except 1907. It has a faculty of 30. The Dean is Dr. J. A. Munk. The registration for 1912-13 was 20; graduates, 4. The thirty-fifth session begins September 16, 1913, and ends May 22, 1914.

Oakland

OAKLAND COLLEGE OF MEDICINE AND SURGERY, Thirty-First and Grove Streets.—Organized in 1900, opened in 1902. The first class graduated in 1906. The faculty numbers 34. The course covers five years of nine months each, and the classes are limited to ten students each. The total fees for each of the five years respectively are $210, $200, $175 and $175. The Registrar is Dr. Edward N. Ewer. The total registration for 1912-13 was 13, graduates 4. The twelfth session begins Aug. 18, 1913, and ends June 1, 1914.

San Francisco

HAHNEMANN MEDICAL COLLEGE OF THE PACIFIC. Homeopathic. Sacramento and Maple Streets.—Organized in 1881 as the Hahnemann Medical College. The first class graduated in 1884. In 1888 it became the Hahnemann Hospital College of San Francisco. It assumed the present name in 1902. It has a faculty of 12 professors and 23 lecturers, instructors, etc., a total of 35. The course covers four years of thirty-four weeks each. Total fees for the first year are $155, and $100 for each of the other three. The Dean is Dr. James W. Ward, 391 Sutter Street. The total registration for 1912-13 was 38, graduates 16. The thirty-second session begins Aug. 12, 1913, and ends April 1, 1914.

COLLEGE OF PHYSICIANS AND SURGEONS, 344 Fourteenth Street.—Organized in 1896. The first class graduated in 1897. The faculty numbers 39. The course covers four years of nine months each. The fees for each of the four years respectively are $165, $160, $160 and $185. The Dean is Dr. Ethan H. Smith. Registration for 1912-13 was 16; graduates, 3. The seventeenth session begins Sept. 2, 1913, and ends June 4, 1914.

San Francisco-Palo Alto

LELAND STANFORD JUNIOR UNIVERSITY, DEPARTMENT OF MEDICINE. University Campus, Palo Alto, and Sacramento and Webster Streets, San Francisco.—Organized in 1908 when, by an agreement, the interests of Cooper Medical College were taken over. The latter continued teaching until 1912 when all the classes enrolled prior to the merger had been graduated. The faculty consists of 27 professors and 24 lecturers, assistants, etc., a total of 51. Three years of collegiate work are required for admission. The course covers four years of nine months each. Students matriculating in September, 1914, and thereafter will be required to take a five year course including a year of practical or intern work prior to graduation. The total fees for each of the first and second years are $160, for the third and fourth years, $150 each. The Dean is Dr. R. L. Wilbur, San Francisco. The total registration for 1912-13 was 53; graduates 7. The next session begins Sept. 3, 1913, and ends May 14, 1914.

COLORADO

Colorado, with a population of 799,024, has one medical college, the University of Colorado School of Medicine. The first two years of the course are given at Boulder, the seat of the university, while the last two, or clinical years, are given in Denver, which has a population of 213,381.

Boulder-Denver

UNIVERSITY OF COLORADO SCHOOL OF MEDICINE.—Organized in 1883. Classes were graduated in 1885 and in all subsequent years except 1898 and 1899. Denver and Gross College of Medicine was merged Jan. 1, 1911, when the legal right to teach the last two or clinical years in Denver was secured. The faculty embraces 51 professors and 19 lecturers and assistants, a total of 70. The work embraces a graded course of four years of nine months each. The entrance requirements are two years of college work counting toward a degree in arts in an accredited college or university. The tuition is $75 per year; there are no other fees. The Dean is Dr. William P. Harlow. The total registration for 1912-13 was 90; graduates, 50. The thirty-second session begins Sept. 8, 1913, and ends June 3, 1914.

CONNECTICUT

Connecticut, with a population of 1,114,756, has one medical college, located in New Haven, population 133,605.

New Haven

YALE MEDICAL SCHOOL, York and Chapel Streets.—This is the Department of Medicine of Yale University. In 1810 a charter was granted for the establishment of this school, and in 1813 it was organized as the Medical Institution of Yale College. The first class graduated in 1814. The faculty consists of 17 professors and 42 lecturers and assistants, a total of 59. The requirement for admission is two full years of collegiate work plus evidence of satisfactory preparation in physics, general inorganic chemistry and general biology. The course covers four years of nine months each. The fees for the four years respectively are approximately $220, $168, $150 and $163. The Dean is Dr. George Blumer. The total registration for 1912-13 was 42; graduates, 9. The 101st session begins Sept. 25, 1913, and ends June 17, 1914.

DISTRICT OF COLUMBIA

Washington, population 331,069, has three medical colleges: George Washington University Department of Medicine, Georgetown University School of Medicine and Howard University School of Medicine.

Washington

GEORGE WASHINGTON UNIVERSITY DEPARTMENT OF MEDICINE, 1325 H Street, N.-W.—Organized in 1825 as the National Medical College, Medical Department of Columbian College. Classes were graduated in 1826 and in all subsequent years, except 1834 to 1838, and 1861 to 1863, inclusive. The original title was changed to Medical Department of Columbian University in 1873. In 1904, by an act of Congress, it received its present title. The faculty is composed of 22 professors and 50 instructors, demonstrators and assistants, a total of 72. The course covers four years of thirty-two weeks each. The total fees are $150 per year. The Dean is Dr. William C. Borden. The total registration for 1912-13 was 103; graduates, 11. The 92d session begins Sept. 24, 1913, and ends June 10, 1914.

GEORGETOWN UNIVERSITY SCHOOL OF MEDICINE,, 920 H Street, N.-W.—Organized in 1851. The first class graduated in 1852. The faculty contains 24 professors, 30 instructors and assistants; total 54. Two years of collegiate work are required for entrance. The course of study covers four terms of eight and one-half months each. The fees for the first year are $165, and for each of the other three years, $150. The Dean is Dr. George M. Kober. The registration for 1912-13 was 126; graduates 29. The 63d session begins Sept. 27, 1913, and ends June 13, 1914.

HOWARD UNIVERSITY SCHOOL OF MEDICINE, Fifth and W Streets, N.-W.—Chartered in 1867. Organized in 1869. The first class graduated in 1871. Colored students compose a majority of those in attendance. The faculty comprises 19 professors and 22 lecturers and assistants, 41 in all. The admission requirements are one year of collegiate work including physics, chemistry, botany and zoology and a reading knowledge of one modern language besides English. The course covers four years of thirty weeks each. The fees of each of the four sessions respectively are $107, $102, $102 and $109. The Dean is Dr. Edward A. Balloch. Registration for 1912-13 was 122; graduates, 21. The 46th session begins Oct. 1, 1913, and ends June 3, 1914.

GEORGIA

Georgia, population 2,609,121, has four medical colleges; Medical College of Georgia, located in Augusta, population 41,040; Atlanta Medical College, the Georgia College of Eclectic Medicine and Surgery, and the Southern College of Medicine and Surgery are in Atlanta, a city of 154,839 population.

Atlanta

ATLANTA MEDICAL COLLEGE.—Butler and Armstrong Streets.—Organized in 1854. Classes graduated, 1855 to 1861, when it suspended. Reorganized in 1865. In 1898 it merged with the Southern Medical College (organized in 1878) taking the name of Atlanta College of Physicians and Surgeons. In 1913 it merged with the Atlanta School of Medicine (organized in 1905), reassuming its first title. It has a faculty of 34 professors and 70 instructors, assistants, etc., a total of 104. The course of study is four years of thirty-two weeks each. The fees are $150 each year. The dean is Dr. W. S. Elkin. Total registration for the two colleges for 1912-13 was 560; graduates, 121. The next session begins Sept. 29, 1913, and ends June 1, 1914.

GEORGIA COLLEGE OF ECLECTIC MEDICINE AND SURGERY, Tanner Street, near Edgewood Avenue.—Organized in 1877 as the Georgia Eclectic Medical College. In 1884 it acquired the charter of the College of American Medicine and Surgery. It assumed its present name in 1886. The first class graduated in 1878. The faculty consists of 13 professors and 6 assistants, a total of 19. Tuition is $80 per year; graduation fee, $25. The Proctor is Dr. E. B. Thomas. Total registration for 1912-13 was 70; graduates, 42. The next session begins Sept. 20, 1913, and ends April 13, 1914.

SOUTHERN COLLEGE OF MEDECINE AND SURGERY, McDaniel Street.—Organized in 1911. The faculty numbers 13. Total registration for 1912-13, 53; graduates, 15. The Dean is Dr. W. B. Lingo.

Augusta

UNIVERSITY OF GEORGIA, COLLEGE OF MEDICINE, Railroad Avenue and Harper Street.—Organized in 1828 as the Medical Academy of Georgia, the name being changed to the Medical College of Georgia in 1829. Since 1873 it has been known as the Medical Department of the University of Georgia. Entire property transferred to the University in 1911. Classes were graduated in 1833 and in all subsequent years except 1862 and 1863. The faculty includes 23 professors and 28 assistants, 51 in all. Entrance requirements beginning Jan. 1, 1914, will be two years of collegiate work. The course is four years of eight months each. Fees for each of the four years respectively are $140, $135, $125 and $150. The Dean is Dr. W. H. Doughty, Jr. The total registration for 1912-13 was 80; graduates, 27. The 20th session begins Sept. 17, 1913, and ends May 27, 1914.

ILLINOIS

Illinois, population 5,638,591, has seven medical colleges, one of which gives instruction at night, all located in Chicago, a city of 2,185,283 inhabitants, and are as follows: Rush Medical College, Northwestern University Medical School, University of Illinois College of Medicine, Hahnemann Medical College, Bennett Medical College, Jenner Medical College and Chicago College of Medicine and Surgery.

Chicago

RUSH MEDICAL COLLEGE.—This school was founded in 1837, organized in 1843, was the medical department of Lake Forest University from 1887 until 1898, when it became affiliated with the University of Chicago. The first class graduated in 1844. The faculty is composed of 103 professors, 151 associates, instructors etc., a total of 254. The requirements for admission are *two years* of college work, including courses in college chemistry, physics and biology, and a reading knowledge of German or French. The course covers four years of eight and a half months each. A fifth year, consisting of a hospital internship or of a fellowship in one of the departments, will be required of all students matriculating for the summer quarter of 1914 and thereafter. All freshmen and sophomore studies are given at the University of Chicago. The last two years are given in the clinical building at the corner of Wood and Harrison Streets. The total fees are $180 each year. A matriculation fee of $5 is paid but once, and there are incidentals amounting from $2 to $5 annually. The Dean is Dr. John M. Dodson. Total registration 1912-13 was 422; graduates, 95. The 71st session begins Oct. 1, 1913, and ends June 10, 1914.

NORTHWESTERN UNIVERSITY MEDICAL SCHOOL, South Dearborn Street, between Twenty-fourth and Twenty-Fifth Streets.—Organized in 1859 as the Medical Department of Lind University. In 1864 it became independent as the Chicago Medical College. It united with Northwestern University in 1869, but retained the name of Chicago Medical College until 1891, when the present name was taken. The faculty comprises 55 professors and 83 lecturers and assistants, a total of 138. The requirements for admission are such as will admit to the College of Liberal Arts of Northwestern University plus two years of college work including courses in physics, chemistry, biology and modern languages. The course covers four years of eight months each. The fees for the four years respectively are $200, $200, $191 and $185. The Dean is Dr. Arthur R. Edwards. The total registration for 1912-13 was 196; graduates, 56. The 54th session begins Sept. 30, 1913, and ends June 6, 1914.

UNIVERSITY OF ILLINOIS COLLEGE OF MEDICINE, Honore and Congress Streets.—Organized in 1882 as the College of Physicians and Surgeons. The first class graduated in 1883. It became the Medical Department of the University of Illinois by affiliation in 1896 and an integral part in 1910. The relationship with the university was canceled in June, 1912, but restored in March, 1913. The American Medical Missionary College was absorbed in 1910. The faculty is composed of 40 professors, 93 assistants and instructors, a total of 133. The fees are $155 each year. The Dean is Dr

William E. Quine. Total registration for 1912-13 was 535; graduates, 133. The 32d session begins Oct. 1, 1913, and ends June 9, 1914.

CHICAGO COLLEGE OF MEDICINE AND SURGERY, 706 South Lincoln Street.—Organized in 1901 as the American College of Medicine and Surgery (Chicago Eclectic Medical College). The latter part of the name was dropped in 1902 and it became the Medical Department of Valparaiso University. Eclecticism was dropped in 1905. The name was changed to the above in 1907. The course covers four years of eight months each. The faculty numbers 138. The total fees of each of the four years are $100. The Registrar is Dr. G. E. Wyneken. The total registration for 1912-13 was 642; graduates 188. The 13th session begins Sept. 30, 1913, and ends May 25, 1914.

HAHNEMANN MEDICAL COLLEGE AND HOSPITAL OF CHICAGO, 2811 Cottage Grove Avenue.—Organized in 1859. The first class was graduated in 1861. The faculty includes 29 professors and 41 lecturers, assistants, etc., a total of 70. The course extends over four years of eight months each. The tuition fees for the four years respectively are $125, $125, $155 and $175. The Registrar is Dr. W. Henry Wilson. The total registration for 1912-13 was 76; graduates 31. The 54th session begins Sept. 29, 1913, and ends May 28, 1914.

BENNETT MEDICAL COLLEGE, Fulton and Ada Streets.—Organized in 1868 as the Bennett College of Eclectic Medicine and Surgery. Dropped Eclecticism in 1909. In 1910 it united with the Illinois Medical College and became by affiliation the Medical Department of Loyola University. The first class graduated in 1870. The faculty numbers 86. The course covers four years of thirty-four weeks each. The fees for the four years respectively are $150, $150, $125 and $175. The Dean is Dr. Maximilian Herzog. The total registration for the two colleges in 1912-13 was 395; graduates, 43. The next session begins Oct. 1, 1913, and ends June 20 1914.

JENNER MEDICAL COLLEGE, an afternoon and night school, located at 223 West Washington Street.—Organized in 1892. Classes were graduated in 1896 and in all subsequent years. The faculty numbers 48. The Secretary is Dr. John D. MacKellar. Total registration for 1912-13, 191; graduates, 11. The next session begins Sept. 2, 1913, and ends June 13, 1914. *Official statements received indicate that diplomas from this college are not recognized by the licensing boards of twenty-nine states.*

INDIANA

Indiana, population 2,700,876, has one medical college, the Indiana University School of Medicine, located at Indianapolis, a city of 233,650 people, except that the work of the first year is offered also at Bloomington, the seat of the University.

Bloomington and Indianapolis

INDIANA UNIVERSITY SCHOOL OF MEDICINE.—Organized in 1893, medical course until 1905. In 1907, by union with the State College of Physicians and Surgeons, the complete course in medicine was offered. In 1908 the Indiana Medical College, which was formed in 1907 by the merger of the Medical College of Indiana (organized in 1869) and the Fort Wayne College of Medicine (organized in 1879) merged into it. The faculty consists of 76 professors and 47 lecturers, associates and assistants, a total of 123. Two years of collegiate work are required for admission. The work of the first year is emphasized only at Bloomington. The work of the other three years is all at Indianapolis. The fees for the four years respectively are $100, $100, $130 and $130. A fifth optional year leading to the "M.D. *cum laude*" has been added. The Secretary at Bloomington is Dr. B. D. Myers; the Dean is Dr. Charles P. Emerson, Indianapolis. The total registration for 1912-13 was 146; graduates 47. The next session begins Sept. 25, 1913, and ends June 24, 1914.

IOWA

Iowa, population 2,224,771, has two medical colleges. The College of Medicine and the College of Homeopathic Medicine of the State University of Iowa, both located in Iowa City, population 10,091.

Iowa City

STATE UNIVERSITY OF IOWA COLLEGE OF MEDICINE. University Campus.—Organized in 1869. First session began in 1870. First class graduated in 1871. The faculty is made up of 20 professors, 21 lecturers, demonstrators and assistants, a total of 41. Two years of collegiate work, including courses in physics, chemistry, biology and French or German, are required for admission. The course of study covers four years of thirty-six weeks each. Total fees for each year are $50 plus a matriculation fee of $10 paid but once and a graduation fee of $10. The Dean is Dr. James R. Guthrie, Dubuque. Total registration for 1912-13 was 99; graduates, 16. The 44th session begins Sept. 22, 1913, and ends June 17 1914.

STATE UNIVERSITY OF IOWA COLLEGE OF HOMEOPATHIC MEDICINE.—Organized in 1877. The first class graduated in 1878. The faculty is composed of 11 professors and 19 lecturers and assistants, a total of 30. The work of the first two years is taken in classes with the students of the College of Medicine of the State University of Iowa, and it has the same entrance requirements. The fees are $50 each year, plus a matriculation fee of $10, paid but once, and a graduation fee of $10. The Dean is Dr. George Royal. Total registration for 1912-13 was 13; graduates, 6. The 36th session begins Sept. 22, 1913, and ends June 17 1914.

KANSAS

Population 1,690,949, has one medical college. The School of Medicine of the University of Kansas gives its first two years in Lawrence, population 12,915, and the last two years in Rosedale, a suburb of the Two Kansas Cities, which together have a population of 330,662.

Lawrence and Rosedale

UNIVERSITY OF KANSAS SCHOOL OF MEDICINE.—Organized in 1880. In 1905 it merged with the Kansas City (Mo.) Medical College, founded in 1869, the College of Physicians and Surgeons, founded in 1894, and the Medico-Chirurgical College, founded in 1897. Absorbed Kansas Medical College in 1913. The faculty, including lecturers and clinical assistants, numbers 56. The requirements for admission are two years of collegiate work. The course covers four years of nine months each. The total fees are, for each of the first two years, $30 per year (and for non-residents of the state, $45); for the last two years $100 and $110, respectively. The Dean is Dr. S. J. Crumbine, Topeka; Associate Dean, Dr. M. T. Sudler. The total registration for 1912-13 was 66; graduates, 7. The 34th session begins Sept. 17, 1913, and ends June 10, 1914.

KENTUCKY

Kentucky, population 2,289,905, has one medical college, the University of Louisville Medical Department, situated in Louisville, a city of 223,928 inhabitants.

Louisville

UNIVERSITY OF LOUISVILLE MEDICAL DEPARTMENT, First and Chestnut Streets.—Organized in 1837 as the Louisville Medical Institute. The first class graduated in 1838, and a class graduated in each subsequent year except 1863. In 1846 the present name was assumed. In 1907 it absorbed the Kentucky University Medical Department. In 1908 it absorbed the Louisville Medical College, the hospital College of Medicine and the Kentucky School of Medicine. It has a faculty of 35 professors and 38 lecturers and assistants, a total of 73. After Jan. 1, 1914, two years of collegiate work will be required for admission. The course covers four years of thirty-two weeks each. The fees are $150 for each of the first three years and $160 for the fourth; graduation fee, $25. The Dean is Dr. W. Edward Grant. The total registration for 1912-13 was 255; graduates, 77. The next session begins Oct. 1, 1913, and ends May 29, 1914.

LOUISIANA

Louisiana, having a population of 1,656,388, contains one medical college, the School of Medicine of the Tulane University of Louisiana, situated in New Orleans, a city of 339,075.

New Orleans

SCHOOL OF MEDICINE OF THE TULANE UNIVERSITY OF LOUISIANA. University Campus and 1551 Canal Street.—Organized in 1834 as the Medical College of Louisiana. Classes were graduated in 1835 and in all subsequent years, except 1863-65, inclusive. It was transferred to Medical Department of the University of Louisiana in 1847 and became the Medical Department of the Tulane University in 1884. The faculty has 21 professors and 96 instructors, demonstrators, etc., a total of 117. The course covers four years of thirty-two weeks each. One year of collegiate work is required for admission. Total fees are $180 per year; graduation fee, $30. The Dean is Dr. Isadore Dyer. The total registration for 1912-13 was 296; graduates, 79. The 80th session begins Sept. 29, 1913, and ends June 3, 1914.

MAINE

Maine, population 742,371, has one medical college, located in Brunswick and Portland, the latter having a population of 58,571.

Brunswick-Portland

MEDICAL SCHOOL OF MAINE. The medical department of Bowdoin College. The first two years are given at Bowdoin College, Brunswick, the last two at Portland, building located on Chadwick Street.—Organized in 1820. The first class graduated in 1820. The faculty numbers 63. The course covers four years of eight months each. The total fees are $120 for the first year and $110 for each of the other three years. The Dean is Dr. Addison S. Thayer, 10 Deering Street, Portland. The total number of students in 1912-13 was 75; graduates, 13. The 93d session begins Oct. 16, 1913, and ends June 24, 1914.

MARYLAND

Maryland, with a population of 1,295,346, contains three medical colleges, all located in Baltimore, a city with 558,485 inhabitants. They are as follows: Johns Hopkins University Medical Department, School of Medicine of the University of Maryland and the College of Physicians and Surgeons.

Baltimore

JOHNS HOPKINS UNIVERSITY MEDICAL DEPARTMENT, Washington and Monument Streets.—Organized in 1893. The first class graduated in 1897. The faculty consists of 39 professors and 79 clinical professors, etc., a total of 118. The requirements for admission demand that the applicant either has (a) completed the chemical-biologic course which leads to the A.B. degree in the university or (b) graduated at an approved college or scientific school and has a knowledge of French and German, physics, chemistry and biology, such as may be obtained from a year's course. The course extends over four years of eight and one-half months each. The charge for tuition is $200 per annum. The Dean is Dr. J. Whitridge Williams. Total registration for 1912-13 was 351; graduates, 76. The 21st session begins Oct. 1, 1913, and ends June 10, 1914.

COLLEGE OF PHYSICIANS AND SURGEONS, Calvert and Saratoga Streets.—Organized in 1872. The first class graduated in 1873.

1913, and ends June 3, 1914.

a total of 133. The fees are $155 each year. The Dean is Dr.

In 1878 it united with Washington University School of Medicine. The faculty consists of 17 professors and 52 lecturers, demonstrators, etc., a total of 69. The work covers four years of eight months each. Total fees are $165 each year; graduation fee $30. The Dean is Dr. William F. Lockwood. The total number of students registered in 1912-13 was 234; graduates, 60. The 42d session begins Oct. 1, 1913, and ends June 4, 1914.

UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE, Lombard and Greene Streets.—Organized in 1807 as the College of Medicine of Maryland. The first class graduated in 1810. In 1812 it became the University of Maryland School of Medicine. Baltimore Medical College was merged into it in 1913. The faculty numbers 135. The course covers four years of eight months each. The total fees are $170 each year; graduation fee, $30. The Dean is Dr. H. Dorsey Conle. The total number of students registered in 1912-13 was 293; graduates, 49. The 107th session begins Oct. 1, 1913, and ends June 1, 1914.

MASSACHUSETTS

Massachusetts, population 3,366,416, has four medical colleges: Medical School of Harvard University, Boston University School of Medicine, College of Physicians and Surgeons and Tufts College Medical School. They are all situated in Boston, a city of 670,585.

Boston

MEDICAL SCHOOL OF HARVARD UNIVERSITY, Longwood Ave.—Organized in 1782. The first class graduated in 1788. It has a faculty of 53 professors and 141 associates, assistants, etc., a total of 194. Candidates for admission must present credits for two years of work in a recognized college or scientific school, which must include courses in physics, chemistry, biology and French or German. The session is four years of nine months each. The total fees for each of the first two years respectively are $234 and $208; for each of the last two years, $200. The Dean is Dr. Edward H. Bradford. The total registration for 1912-13 was 285; graduates, 60. The 132d session begins Sept. 22, 1913, and ends June 18, 1914.

BOSTON UNIVERSITY SCHOOL OF MEDICINE, 80 East Concord Street.—Organized in 1873. In 1874 the New England Female Medical College, founded in 1848, was merged into it. The first class graduated in 1874. The faculty includes 32 professors, 38 associates, etc., a total of 70. The course covers four years of eight months each. Total fees for the first, second and third years, $125 each, and for the last year $155. The Dean is Dr. John P. Sutherland. Total registration for 1912-13 was 98; graduates, 11. The 41st session begins Oct. 2, 1913, and ends June 3, 1914.

TUFTS COLLEGE MEDICAL SCHOOL, 416 Huntington Avenue.—Organized in 1893 as the Medical Department of Tufts College. The first class graduated in 1894. It has a faculty of 34 professors and 77 assistants, lecturers, etc., a total of 111. The course covers four years of eight months each. The total fees are $155 each year. The Secretary is Dr. Frederic M. Briggs. Total registration for 1912-13 was 317; graduates, 85. The 20th session begins Sept. 24, 1913, and ends June 1, 1914.

COLLEGE OF PHYSICIANS AND SURGEONS, 517 Shawmut Avenue.—Organized in 1880. The first class graduated in 1882. The college announcement gives the names of 180 "matriculants and applicants" for the session of 1912-13, which included both dental and medical students. The names of some of the students who graduated in 1910 appear in the announcements of this school from six to nine years. The Dean is Dr. Thomas D. Crothers. Total registration for 1912-13 was about 80; graduates, 19. *This college has been reported not recognized by the Massachusetts Medical Society.*

MICHIGAN

Michigan, population 2,810,173, has three medical colleges. Two of these, the University of Michigan Department of Medicine and Surgery and the Homeopathic College of the University of Michigan, are located at Ann Arbor, a city of 14,817 people. The Detroit College of Medicine is located at Detroit, a city of 465,766 inhabitants.

Ann Arbor

UNIVERSITY OF MICHIGAN DEPARTMENT OF MEDICINE AND SURGERY.—Organized in 1850. The first class graduated in 1851. It has a faculty composed of 18 professors and 66 associates, instructors, etc., a total of 84. The entrance requirements are two years of college work, including courses in chemistry, physics and biology, with laboratory work, and a reading knowledge of one modern language. The curriculum embraces four years of nine months each. The total fees for Michigan students for the entire course of four years is $350 and for others about $400. The Dean is Dr. Victor C. Vaughan. The total registration for 1912-13 was 221; graduates, 42. The sixty-fourth session begins Sept 30, 1913, and ends June 25, 1914.

UNIVERSITY OF MICHIGAN HOMEOPATHIC COLLEGE.—Organized in 1875. The first class graduated in 1877. Although the work of the first two years is taken in the same classes with the Department of Medicine and Surgery of the University of Michigan, nevertheless the entrance requirements have been kept at one year of collegiate work and even then with an allowance of conditions in as much as eight hours, the requirements for the other departments are two years of collegiate work. The Dean is Dr. W. B. Hinsdale. The total registration for 1912-13 was 63; graduates, 13. The next session begins Sept. 30, 1913, and ends June 25, 1914.

Detroit

DETROIT COLLEGE OF MEDICINE, St. Antoine, Catherine and Mullett Streets and Gratiot Avenue.—Organized in 1885 by consolidation of Detroit Medical College, organized in 1868, and the Michigan College of Medicine, organized in 1880. The first class graduated in 1886. The faculty embraces 23 professors, 102 lecturers, instructors, etc., a total of 125. The course covers four years of eight months each. The Registrar is Dr. F. B. Walker. The total registration for 1912-13 was 197; graduates, 27. The twenty-ninth session begins Sept. 7, 1913, and ends June 4, 1914.

MINNESOTA

Minnesota, population 2,075,708, contains one medical school, the University of Minnesota Medical School, situated in Minneapolis. Minneapolis and St. Paul are practically one city, and have a combined population of 516,162.

Minneapolis

UNIVERSITY OF MINNESOTA MEDICAL SCHOOL.—Organized in 1883; reorganized in 1888 by absorption of St. Paul Medical College and Minnesota Hospital Medical College. The first class graduated in 1889. In 1908 the Minneapolis College of Physicians and Surgeons, organized in 1883, was merged. In 1909 the Homeopathic College of Medicine and Surgery was merged. The faculty includes 10 professors and clinical professors and 76 associate professors, assistants, etc., a total of 86. The curriculum covers four years of nine months each and a year's internship in an approved hospital. The entrance requirements are two years of university work which must include one year each of physics, general chemistry, qualitative analysis, zoology or botany, and French or German, all in addition to a four-year high-school course, including two years of Latin. Students entering hereafter will be required to secure a degree of B.S. or A.B. before the M.D. is granted. Total fees are $150 each year. The Dean is Dr. E. P. Lyon. The total registration for 1912-13 was 176; graduates, 45. The twenty-sixth session begins Sept. 17, 1913, and ends June 11, 1914.

MISSISSIPPI

Mississippi, population 1,797,114, has one medical college, the Medical Department of the University of Mississippi, which is located at Oxford, a city of 1,825 inhabitants.

Oxford

UNIVERSITY OF MISSISSIPPI MEDICAL DEPARTMENT.—Organized in 1903. Gives only the first two years of the medical course. The session extends over eight and a half months. The total fees each year are respectively $102 and $100. The faculty numbers 13. The Dean is Dr. W. S. Leathers. The total registration for 1912-13 was 38. The eleventh session begins Sept. 18, 1913, and ends June 2, 1914.

MISSOURI

Missouri, population 3,293,335, has eight medical colleges. St. Louis, population 687,029, contains five of these, viz., the School of Medicine of St. Louis University, Washington University Medical Department, St. Louis College of Physicians and Surgeons and the American Medical College. Kansas City, which with Kansas City, Kan., has a total population of 330,662, has two colleges, namely: the Kansas City Hahnemann Medical College and the Eclectic Medical University. Ensworth Medical College is located in St. Joseph, population 77,403. The Department of Medicine of the University of Missouri is at Columbia, a town of 9,662 people.

Columbia

UNIVERSITY OF MISSOURI SCHOOL OF MEDICINE.—Organized at St. Louis in 1845; was discontinued in 1859, but was reorganized at Columbia in 1872. Teaching of the clinical years was suspended in 1909. The faculty includes 9 professors and 6 assistant professors, lecturers, etc., a total of 15. The course covers two years of nine months each. The entrance requirements are two years of college work including English, 5 hours; German, 5 hours; general zoology, 5 hours; physics, 5 hours; inorganic chemistry, 5 hours; elective, 35 hours. Equivalent work in foreign language may be substituted for the English and German. Total fees are $60 each year. Total registration of students for 1912-13 was 45. The next session begins Sept. 18, 1913, and ends June 4, 1914.

Kansas City

KANSAS CITY HAHNEMANN MEDICAL COLLEGE, 916 Tracy Avenue.—Organized in 1888 as the Kansas City Homeopathic Medical College. The first class graduated in 1899. In 1902 it united with the Hahnemann Medical College of the Kansas City University, taking the present title. The Dean is Dr. Moses T. Runnels. Total registration for 1912-13 was 55; graduates, 8. The next session begins Sept. 18, 1913, and ends May 21, 1914.

ECLECTIC MEDICAL UNIVERSITY, 1423 Independence Avenue.—Organized at Kansas City, Mo., in 1898 with the present title. Moved to Kansas City, Kan., in 1907, and took the name of Western Eclectic College of Medicine and Surgery. Returned to Kansas City, Mo., in 1909 and resumed the present title. First class graduated in 1900. Fees are $100 each year. The Secretary is Dr. D. R. Alexander. The total registration for 1912-13 was 50; graduates, 13. *Reported not in good standing by the Missouri State Board of Health and by twenty other state licensing boards.*

St. Joseph

THE ENSWORTH MEDICAL COLLEGE, Seventh and Jule Streets.—Organized in 1876 as the St. Joseph Hospital Medical College. In 1882 it merged with the College of Physicians and Surgeons to form the St. Joseph Medical College. In 1888 changed name to Ensworth Medical College. In 1905 merged with the Central Medical College, organized in 1894, to form the Ensworth-Central

Medical College. In 1907 the present title was resumed. Will close in 1914. The faculty numbers 34. Only seniors will be registered. Fees, $125. The Secretary is Dr. T. E. Potter. Total registration for 1912-13 was 20; graduates, 7. The next session begins Sept. 20, 1913, and ends about May 20, 1914.

St. Louis

WASHINGTON UNIVERSITY MEDICAL SCHOOL, 1806 Locust Street. Organized in 1842 as the Medical Department of St. Louis University. In 1855 it was chartered as an independent institution under the name of St. Louis Medical College. The first class graduated in 1843. In 1891 it became the Washington University Medical School. In 1899 it absorbed the Missouri Medical College. The faculty comprises 23 professors and 51 lecturers, instructors, etc., a total of 74. Two full years of college work are required for admission including courses in English, physics, chemistry and biology and a reading knowledge of German. The course is four years of eight months each. The total fees for the four years are, respectively, $155, $150, $150 and $155. The Dean is Dr. Eugene L. Opie. The total registration for 1912-13 was 66; graduates 28. The next session begins Sept. 25, 1913, and ends June 11, 1914.

ST. LOUIS UNIVERSITY SCHOOL OF MEDICINE, 1402 South Grand Avenue.—Organized in 1901 by union of Marion-Sims Medical College, organized in 1890, and Beaumont Hospital Medical College, organized in 1886. It became the Medical Department of St. Louis University in 1903. The faculty is composed of 43 professors, 67 lecturers and assistants, a total of 110. One year of college subjects preliminary to the four years of medical subjects is given in the medical school. The curriculum covers four years of thirty-four weeks each. The total fees are $130 each year. The total registration for 1912-13 was 233; graduates, 69. The next session begins Oct. 1, 1913, and ends June 7, 1914.

ST. LOUIS COLLEGE OF PHYSICIANS AND SURGEONS, Jefferson Avenue and Gamble Street.—Organized in 1869. Classes graduated in 1870 and each subsequent year until 1873, when it suspended. It was reorganized in 1879. Classes graduated in 1880 and subsequent years. The fees for the four years are, respectively, $110, $105, $100 and $95. The Secretary is Dr. E. T. Brand. Total registration for 1912-13 was 38; graduates, 19. The next session begins Sept. 15, 1913, and ends May 17, 1914.

AMERICAN MEDICAL COLLEGE, 407 South Jefferson Avenue.—Organized in 1873 as an Eclectic College. Eclecticism dropped in 1910. Absorbed the Barnes Medical College in 1911. Became the Medical Department of the National University of Arts and Sciences in 1912. Two classes were graduated each year from 1874 to 1883, inclusive. Since then one class has graduated each year. The course covers four years of eight and a half months each. Fees: matriculation, $5; tuition each year, $135. The Dean is Dr. James Moores Ball. The total registration for 1912-13 was 211; graduates, 33. The next session begins Sept. 23, 1913, and ends June 6, 1914.

NEBRASKA

Nebraska, population 1,192,214, has three medical colleges. The University of Nebraska College of Medicine and the John A. Creighton Medical College of Omaha, population 124,096, and the Cotner Medical College at Lincoln, population 43,973.

Bethany-Lincoln

COTNER MEDICAL COLLEGE. Eclectic. University Campus, Bethany, and corner 13th and P Streets, Lincoln. It is the Medical Department of Cotner University.—Organized in 1890 as the Lincoln Medical College. Assumed present title in 1911. The first class graduated in 1891. The Registrar is Prof. R. L. Hoff, Bethany. The total registration for 1912-13 was 35; graduates, 7. The next session begins Sept. 15, 1913, and ends May 28, 1914.

Omaha

JOHN A. CREIGHTON MEDICAL COLLEGE, Fourteenth and Davenport Streets. It is the Medical Department of Creighton University.—Organized in 1892. The first class graduated in 1895. It has a faculty of 18 professors and 30 associates, lecturers and assistants, a total of 48. The course of study embraces four years of eight months each. The total fees for the four years, respectively, are $140, $130, $130 and $130. The Dean is Dr. A. L. Muirhead. Total registration for 1912-13 was 182; graduates, 39. The twenty-second session begins Sept. 1, 1913, and ends April 30, 1914.

COLLEGE OF MEDICINE UNIVERSITY OF NEBRASKA, Forty-second Street and Dewey Avenue.—Organized in 1881 as the Omaha Medical College. The first class graduated in 1882. It became the Medical Department of Omaha University in 1891. In 1902 it affiliated with the University of Nebraska, with the present title. The first two years were given at Lincoln and the last two in Omaha until 1913 when all four years were transferred to Omaha. The faculty is composed of 31 professors and 27 lecturers and instructors, total 58. Two years of collegiate work are required for admission including courses in physics, chemistry, zoology and German. The fees are approximately $100 per annum. The Acting-Dean is Dr. Robert H. Wolcott. Total registration for 1912-13 was 78; graduates, 9. The next session begins Sept. 9, 1913, and ends May 29, 1914.

NEW HAMPSHIRE

New Hampshire, population 443,140, has one medical college, located at Hanover, population 1,884.

Hanover

DARTMOUTH MEDICAL SCHOOL.—Organized as New Hampshire Medical Institute in 1797. The first class graduated in 1798. It is the Medical Department of Dartmouth College. The faculty is made up of 25 professors and 3 instructors, a total of 28. Two years of collegiate work are required for admission. The course covers four years of eight months each. After the class of 1914 has graduated the school will discontinue clinical teaching. The fees for the four years are, respectively, $160, $162, $125 and $125. The Dean is Dr. John M. Gile. The total registration for 1912-13 was 27; graduates, 10. The work of the first and second years begins with that of the academic department Sept. 19, 1913, and ends June 21, 1914; for the advanced classes the course begins Aug. 5, 1913, and ends April 24, 1914.

NEW YORK

New York State, population 9,113,614, has ten medical colleges. Seven of these, College of Physicians and Surgeons (Columbia University), Long Island College Hospital, New York Homeopathic Medical College and Hospital, New York Medical College and Hospital for Women, Cornell University Medical College, the University and Bellevue Hospital Medical College and Fordham University School of Medicine, are located in New York City, population 4,766,883. Albany Medical College is located in Albany, a city of 100,253 people. The University of Buffalo Medical Department is situated in Buffalo, population 423,715. The College of Medicine, Syracuse University, is in Syracuse, a city of 137,249 inhabitants.

Albany

ALBANY MEDICAL COLLEGE, Lancaster and Jay Streets.—Organized in 1838. The first class graduated in 1839. It became the Medical Department of Union University in 1873. The faculty is composed of 28 professors and 75 lecturers, assistants, etc., a total of 103. The curriculum covers four years of eight months each. Fees: First year, $130; second year, $145; third year, $120, and fourth year, $130. The Registrar is Dr. Willis G. Tucker. The total registration for 1912-13 was 239; graduates, 48. The eighty-third session begins Sept. 23, 1913, and ends May 26, 1914.

Buffalo

UNIVERSITY OF BUFFALO MEDICAL DEPARTMENT, High Street, near Main.—Organized in 1846. The first class graduated in 1874. It absorbed the Medical Department of Niagara University in 1898. The faculty is composed of 34 professors and 56 lecturers, assistants, etc., a total of 90. The course covers four years of eight months each. The total fees for the four years, respectively, are $185, $180, $140 and $140. The Dean is Dr. Herbert U. Williams. Total registration for 1912-13 was 221; graduates, 43. The sixty-eighth session begins Sept. 22, 1913, and ends June 5, 1914.

New York

COLUMBIA UNIVERSITY COLLEGE OF PHYSICIANS AND SURGEONS, 437 West Fifty-Ninth Street.—Organized in 1807 by the regents of the University of the State of New York as their medical department. The first class graduated in 1811. Affiliated with Columbia College in 1814 and was permanently connected in 1860, when it became the Medical Department of Columbia College. That institution became Columbia University in 1891. The faculty is composed of 67 professors and 138 instructors, demonstrators, etc., a total of 205. Two years of collegiate work, including courses in physics, chemistry and biology, are required for admission. The work covers four years of eight months each. The Dean is Dr. Samuel W. Lambert. The total fees for the first year are $255; for the second and third, $250, and $275 for the fourth year. Total registration for 1912-13 was 339; graduates, 99. The 106th session begins Sept. 24, 1913, and ends June 3, 1914.

CORNELL UNIVERSITY MEDICAL COLLEGE, First Avenue and Twenty-Eighth Street, New York City, and Ithaca.—Organized in 1898. The first class was graduated in 1899. The work of the first year may be taken either in Ithaca or New York. The faculty is composed of 50 professors and 95 assistants, lecturers, instructors, etc., a total of 145. All candidates for admission must be graduates of approved colleges or scientific schools or seniors of approved colleges which will permit them to substitute the first year of this medical school for the fourth year of their college course and will confer on them the Bachelor degree on the completion of the year's work. The candidate must also have such knowledge of physics, inorganic chemistry and biology as may be obtained in college by a year's course in these subjects when accompanied by laboratory work. Fees: First and fourth years, $190 each; second and third, $185 each. The Dean is Dr. William M. Polk. Total registration for 1912-13 was 102; graduates, 19. The sixteenth session begins Oct. 1, 1913, and ends June 11, 1914.

FORDHAM UNIVERSITY SCHOOL OF MEDICINE, Third and Pelham Avenues.—Organized in 1905. First class graduated in 1909. The faculty consists of 49 professors and 44 lecturers and assistants, a total of 93. The course of instruction covers four years of eight and a half months each. Fees, $200 each year. A year's work in a recognized college of liberal arts is required for admission. The Dean is Dr. William P. Healy. The total registration for 1912-13 was 136; graduates, 31. The ninth session begins Sept. 26, 1913, and ends June 10, 1914.

LONG ISLAND COLLEGE HOSPITAL, Henry Street, near Atlantic Avenue, Brooklyn.—Organized in 1858. The first class graduated in 1860. It has a faculty of 37 professors and 44 assistants, instructors, etc., a total of 81. The course covers four years of eight months each. Fees: First year, $205; second year, $200; third, $180, and $200 for the fourth year. The Secretary is Dr. Joseph H. Raymond. Total registration 1912-13 was 438; graduates, 69. The fifty-sixth session begins Sept. 23, 1913, and ends June 1, 1914.

NEW YORK HOMEOPATHIC MEDICAL COLLEGE AND FLOWER HOSPITAL, Eastern Boulevard, between Sixty-Third and Sixty-Fourth Streets.—Organized in 1858. Incorporated in 1860 as the Homeopathic Medical College for the State of New York. The present title was assumed in 1869. The first class graduated in 1861. The faculty consists of 43 professors and 42 assistants, lecturers, etc., a total of 85. The Dean is Dr. Royal S. Copeland. Total registration for 1912-13 was 245; graduates, 45. The fifty-fourth session begins Oct. 1, 1913, and ends May 29, 1914.

NEW YORK MEDICAL COLLEGE AND HOSPITAL FOR WOMEN, (Homeopathic) 17-19 West One Hundred and First Street.—Organized in 1863. The first class graduated in 1864. The faculty consists of 30 professors and 20 lecturers and assistants, a total of 50. The course covers four years of thirty weeks each. The fees for each of the four years, respectively, are $155, $150, $135 and $155. The Dean is Dr. Emily C. Charles. The total registration for 1912-13 was 45; graduates, 9. Matriculants are not listed in the annual announcement. The fifty-first session begins Sept. 30, 1913, and ends May 24, 1914.

UNIVERSITY AND BELLEVUE HOSPITAL MEDICAL COLLEGE, First Avenue and Twenty-Sixth Street.—Organized in 1898 by the union of the New York University Medical College, organized in 1841, and the Bellevue Hospital Medical College, organized in 1861. It is the Medical Department of New York University. The faculty is composed of 44 professors and 135 instructors, etc., in all 179. The course covers four years of eight months each. The fees are $200 per year; graduation fee, $25. The Dean is Dr. Egbert Le Fevre. Total registration for 1912-13 was 352; graduates, 75. The next session begins Sept. 24, 1913, and ends June 10, 1914.

Syracuse

SYRACUSE UNIVERSITY COLLEGE OF MEDICINE, 307-311 Orange Street.—Organized in 1872, when the Geneva Medical College was removed to Syracuse, under the title "The College of Physicians and Surgeons of Syracuse University." Present title assumed in 1875. The first class graduated in 1873 and a class graduated each subsequent year. In 1884 the amalgamation with the university was made complete. Two years of a recognized college course are required for admission. The course covers four years of thirty-two weeks each. The total fees for each of the four years are respectively, $186, $186, $146 and $161. The faculty is composed of 23 professors and 48 associate and assistant professors, lecturers and instructors. The Dean is Dr. John L. Heffron. The total enrollment for 1912-13 was 87; graduates, 21. The forty-second session begins Sept. 30, 1913, and ends June 10, 1914.

NORTH CAROLINA

North Carolina, population 2,206,287, has four medical schools, two of which give only the first two years of the medical course. The Medical Department of the University of North Carolina is located at Chapel Hill, population 1,200. The Leonard School of Medicine is at Raleigh, population 19,218. The North Carolina College is at Charlotte, population 34,014. Wake Forest School of Medicine is at Wake Forest, population 823.

Chapel Hill

UNIVERSITY OF NORTH CAROLINA MEDICAL DEPARTMENT.—Organized in 1890. Until 1902 this school gave only the work of the first two years, when the course was extended to four years by the establishment of a department at Raleigh. The first class graduated in 1903. A class was graduated each subsequent year, including 1910, when the clinical department at Raleigh was discontinued. The faculty is composed of 12 professors and 17 lecturers, assistants, etc., a total of 29. The total fees for the two years, respectively, are $115 and $116. The Dean is Dr. I. H. Manning. The total registration for 1912-13 was 54. The twenty-eighth session begins Sept. 8, 1913, and ends June 3, 1914.

Charlotte

NORTH CAROLINA MEDICAL COLLEGE, Church and Sixth Streets.—Organized in 1887 at Davidson as the Davidson School of Medicine. It was a preparatory school only, not granting any degrees until 1903, when it was chartered under its present name. The first class was graduated in 1893. Removed to Charlotte in 1907. The faculty numbers 42. The course covers four years of eight months each. The fees for the four years are, respectively, $107, $102, $100 and $130. The Dean is Dr. Walter O. Nisbet. The total registration for 1912-13 was 85; graduates, 26. The next session begins Oct. 1, 1913, and ends June 1, 1914.

Raleigh

LEONARD MEDICAL SCHOOL.—Colored. This department of Shaw University was established in 1882. Classes were graduated in 1886, 1888 and in all subsequent years. It has a faculty of 14. The course covers four years of seven and a half months each. The total fees for each year are $57; graduation fee, $10. The President is Charles F. Meserou. Total registration for 1912-13 was 97; graduates, 22. The thirty-second session begins Oct. 1, 1913, and ends May 14, 1914.

Wake Forest

WAKE FOREST COLLEGE SCHOOL OF MEDICINE.—This school was organized in 1902. The faculty, including the professors of chemistry, physics, and biology, numbers 9 exclusive of laboratory assistants. Only the first two years of the medical course are offered after the completion of freshmen and sophomore college work, and on this combined course the B.S. degree is conferred. Each annual course extends over nine months. The fees for each year aggregate $102.50. The Secretary is E. B. Earnshaw. The total registration for 1912-13 was 30. The twelfth session begins Sept. 2, 1913, and ends May 22, 1914.

NORTH DAKOTA

North Dakota, population 577,056, has one medical college, the College of Medicine of the State University of North Dakota, which is situated at University, near Grand Forks, a city of 12,478 people. It gives only the first two years of the medical course.

University

UNIVERSITY OF NORTH DAKOTA COLLEGE OF MEDICINE.—Organized in 1905. The faculty is composed of 5 professors and 5 instructors, a total of 10. The course consists of two years' academic work and two years of medical college subjects, occupying nine months each year. The total fees for each of the medical years are $50. The Dean is Dr. H. E. French. The total registration for 1912-13 was 14. The ninth session begins Sept. 23, 1913, and ends June 17, 1914.

OHIO

Ohio, population 4,767,121, has six medical colleges. Two of these, the Ohio-Miami Medical College of the University of Cincinnati and the Eclectic Medical College, are located in Cincinnati, a city of 364,463 inhabitants. Cleveland, population 560,663, contains two medical schools: Western Reserve Medical College and the Cleveland-Pulte Medical College. Columbus, population 181,548, contains one medical college, the Starling-Ohio Medical College. Toledo, with 168,497 people, has one medical school, the Toledo Medical College.

Cincinnati

THE OHIO-MIAMI MEDICAL COLLEGE OF THE UNIVERSITY OF CINCINNATI, Clifton Avenue, west of Vine Street.—Organized in 1909 by the union of the Ohio Medical College (founded in 1819) with the Miami Medical College (founded in 1852). The Ohio Medical College became the Medical Department of the University of Cincinnati, April 26, 1896. Under a similar agreement, March 2, 1909, the Miami Medical College also merged into the University, when the present title was taken. The faculty consists of 37 professors, 87 associates, assistants, etc., a total of 124. Two years of college work are required for admission. The course covers four years of eight months each. The fees are a tuition fee of $150 a year; a matriculation fee of $5, payable but once, and a graduation fee of $25. The Dean is Dr. Paul G. Woolley. The total registration for 1912-13 was 80; graduates, 26. The next session begins Oct. 1, 1913, and ends June 13, 1914.

ECLECTIC MEDICAL COLLEGE, 630 West Sixth Street.—Organized in 1833 at Worthington as the Worthington Medical College. Removed to Cincinnati in 1843. In 1845 it was chartered as the Eclectic Medical Institute. In 1857 the American Medical College, organized in 1839, was merged into it, and in 1859 the Eclectic College of Medicine and Surgery, organized in 1856, merged into it. In 1910 it assumed its present title. Classes were graduated in 1833 and in all subsequent years except 1839 to 1843, inclusive. It has a faculty of 17 professors and 18 lecturers and assistants, a total of 35. The course covers four years of eight months each. The fees are $100 for each year. The Dean is Dr. R. L. Thomas. Total registration for 1912-13 was 92; graduates, 26. The next session begins Sept. 11, 1913, and ends May 11, 1914.

Cleveland

CLEVELAND-PULTE MEDICAL COLLEGE, Prospect Avenue and Huron Road.—Homeopathic.—Organized in 1849 as the Western College of Homeopathic Medicine. The first class graduated in 1853. In 1857 it became the Western Homeopathic College and in 1870 it became the Homeopathic Hospital College when the Homeopathic Medical College for Women, organized in 1868, merged into it. In 1894 it became the Cleveland University of Medicine and Surgery. In 1898 it merged with the Cleveland Medical College, organized in 1890, and assumed the title of Cleveland Homeopathic Medical College. In 1910 Pulte Medical College of Cincinnati merged into it and the present title was assumed. The faculty numbers 53. The fees are $125 each year. The Dean is Dr. George H. Quay. Total registration for 1912-13 was 85; graduates, 23. The next session begins Oct. 1, 1913, and ends June 12, 1914.

WESTERN RESERVE UNIVERSITY SCHOOL OF MEDICINE, St. Clair Avenue and East Ninth Street.—Organized in 1843 as the Cleveland Medical College. The first class graduated in 1844. It assumed the present title in 1881. In 1910 it absorbed the Cleveland College of Physicians and Surgeons. The faculty includes 41 professors and 55 lecturers, assistants, etc., a total of 96. The curriculum embraces four years of eight and one-half months each. Three years of college work are required for admission. The total fees for the first year are $162 and $155 each for the other three years. The Secretary is Dr. F. C. Waite. The total registration for 1912-13 was 161; graduates, 38. The seventy-first session begins Oct. 2, 1913, and ends June 18, 1914.

Columbus

STARLING-OHIO MEDICAL COLLEGE, Buttles Avenue and Park Street.—Organized in 1907 by the union of Starling Medical College (organized 1834) with the Ohio Medical University (organized 1890). The faculty consist of 27 professors and 37 lecturers, demonstrators, etc., a total of 64. The course covers four years of eight months each. Matriculation, $5; tuition $150 each year. The Dean is Dr. W. J. Means. The total registration for 1912-13 was 263; graduates, 53. The next session begins Sept. 24, 1913, and ends May 27, 1914.

Toledo

TOLEDO MEDICAL COLLEGE, Cherry and Page Streets.—Organized in 1883. The first class graduated in 1883. The faculty numbers 50. The curriculum embraces four years of eight months each. The fees for each of the four years are, respectively, $137, $132, $125 and $125. The Dean is Dr. L. A. Brewer. The total registration for 1912-13 was 32; graduates, 15. The next session begins Oct. 1, 1913, and ends May 31, 1914.

OKLAHOMA

Oklahoma, population 1,657,155, has one medical college, the School of Medicine of the State University of Oklahoma. The

work of the first and second years is given in the academic laboratories at Norman, a city of 3,040 inhabitants. The work of the third and fourth years is given in Oklahoma City, which has a population of 64,205 and which is eighteen miles north of Norman.

Norman and Oklahoma City

STATE UNIVERSITY OF OKLAHOMA SCHOOL OF MEDICINE.—Organized in 1900. Gave only the first two years of the medical course until 1910, when a clinical department was established at Oklahoma City. It has a faculty of 9 professors and 27 instructors, a total of 36. The course is four years of nine months each. An optional course of six years is offered for the degrees of B.S., and M.D. The total fees for the four years are, respectively, $55, $28, $100 and $105. The Dean is Dr. W. J. Jolly, 317 East Fourteenth Street, Oklahoma City. The total registration for 1912-13 was 32; graduates, 9. The fourteenth session begins Sept. 25, 1913, and ends June 11, 1914.

OREGON

Oregon, population 672,765, has one medical college, the University of Oregon Medical Department located in Portland, a city of 207,214 population.

Portland

UNIVERSITY OF OREGON MEDICAL DEPARTMENT, Lovejoy and Twenty-Third Streets.—Organized in 1887. The first class graduated in 1888. The Willamette University Medical Department was merged in 1913. It has a faculty of 18 professors and 35 lecturers, assistants, etc., a total of 53. Entrance requirements are one year of college work or its equivalent. The course is four years of eight months each. Fees: Matriculation $5; tuition $150 each year. The Dean is Dr. K. A. J. Mackenzie. The total registration for 1912-13 was 57; graduates, 19. The twenty-seventh session begins Oct. 1, 1913, and ends June 1, 1914.

PENNSYLVANIA

Pennsylvania, population 7,665,111, has seven medical colleges. Of these Philadelphia, having a population of 1,549,008, contains six, as follows: University of Pennsylvania Department of Medicine, Jefferson Medical College, Hahnemann Medical College, Woman's Medical College of Pennsylvania, Medico-Chirurgical College of Philadelphia and Temple University Department of Medicine. The other school, the Medical Department of the University of Pittsburgh, is situated in Pittsburgh, a city of 533,905.

Philadelphia

UNIVERSITY OF PENNSYLVANIA DEPARTMENT OF MEDICINE, Thirty-Sixth Street and Hamilton Walk.—Organized in 1765. Classes were graduated in 1768 and in all subsequent years except 1772-79, inclusive. The original title was the Department of Medicine, College of Philadelphia, which was changed to the present title in 1791. It granted the first medical diploma issued in America. The faculty is made up of 30 professors, 17 associate, adjunct and assistant professors and 126 demonstrators, lecturers, associates, instructors, etc., a total of 173. The requirements for admission are the equivalent of work prescribed for the first two years in recognized colleges, which work must include a knowledge of physics, chemistry and general biology or zoology and two foreign languages, one of which must be French or German. The course embraces study of four years of thirty-four weeks each. The total fees for each of the four years are, respectively, $229.50, $211.50, $210 and $211.50. The Dean is Dr. William Pepper. Total registration for 1912-13 was 307; graduates, 100. The next session begins Sept. 26, 1913, and ends June 17, 1914.

JEFFERSON MEDICAL COLLEGE, Tenth and Walnut Streets.—Organized in 1825 as the Medical Department of Jefferson College, Cannonsburg. The first class graduated in 1826. The present title was assumed in 1838. It has a faculty of 24 professors and 132 lecturers, demonstrators, etc., a total of 156. The course of study covers graded work of four years of eight and a half months each. An optional fifth year is offered. The tuition is $180 a year, with a matriculation fee of $5, paid but once. The Subdean is Dr. Ross V. Patterson. The total registration for 1912-13 was 680; graduates, 126. The eighty-ninth session begins Sept. 24, 1913, and ends June 6, 1914.

MEDICO-CHIRURGICAL COLLEGE OF PHILADELPHIA, Cherry Street, between Seventeenth and Eighteenth Streets.—Organized in 1881. The first class graduated in 1882. The faculty is composed of 42 professors and 70 lecturers, assistants, etc., a total of 112. The work embraces four years of eight months each. The fees for each of the four years are, respectively, $162.50, $159, $155.50 and $153. The Dean is Dr. Seneca Egbert. The total registration for 1912-13 was 314; graduates, 64. The thirty-third session begins Sept. 22, 1913, and ends June 5, 1914.

WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA, Twenty-First and N. College Avenue.—Organized in 1850. Classes were graduated in 1851 and in all subsequent years except 1861 and 1862. It has a faculty of 11 professors and 49 assistants, lecturers, etc., in all 60. The curriculum covers four years of eight months each. Fees for each of the four years are, respectively, $161, $156, $154 and $153. The Dean is Dr. Clara Marshall. The total registration for 1912-13 was 93; graduates, 24. The sixty-fourth session begins Sept. 17, 1913, and ends June 3, 1914.

HAHNEMANN MEDICAL COLLEGE AND HOSPITAL, 226 North Broad Street.—Organized in 1848 as the Homeopathic Medical College of Pennsylvania. In 1869 it united with the Hahnemann Medical College of Philadelphia, taking the present title. The first class graduated in 1849. It has a faculty of 31 professors and 57 lecturers, instructors, etc., in all 88. The work covers four years of eight and a half months each. Fees: For each year, $180; matriculation, $5; laboratory fee, $10. The Dean is Dr. William B. Van Lennen. The total registration for the college year 1912-13 was 92; graduates, 31. The sixty-sixth session begins Sept. 22, 1913, and ends June 4, 1914.

THE TEMPLE UNIVERSITY DEPARTMENT OF MEDICINE, Eighteenth and Buttonwood Streets.—Organized in 1901. The first class graduated in 1904. The faculty numbers 97. It gives a four-year day course. The fees are $150 per year. The Dean is Dr. Frank C. Hammond. The total registration for 1912-13 was 69; graduates, 13. The thirteenth session begins Sept. 18, 1913, and ends June 6, 1914.

Pittsburgh

UNIVERSITY OF PITTSBURGH SCHOOL OF MEDICINE, Grant Boulevard.—Organized in 1886 as the Western Pennsylvania Medical College. Became the Medical Department of the University of Pittsburgh in 1908. Removed to the University campus in 1910. The first class graduated in 1887. The faculty is composed of 16 professors, and 82 associates, assistants, etc., 98 in all. Entrance requirements are for two years of recognized college work to have included essentially courses in chemistry (inorganic and organic), physics, biology and a modern language other than English, based on a four-year high school preparation. It is possible for students to get the degrees of B.S. and M.D. in six years. The course of study for medicine alone is four years of eight and a half months each. The tuition is $220 a year, $210 if paid in advance. The Dean is Dr. Thomas S. Arbuthnot. The total registration for 1912-13 was 153; graduates, 43. The twenty-eighth session begins Sept. 29, 1913, and ends June 17, 1914.

SOUTH CAROLINA

South Carolina, population 1,515,400, has one medical college, situated in Charleston, a city of 58,833 people.

Charleston

THE MEDICAL COLLEGE OF THE STATE OF SOUTH CAROLINA, Queen and Franklin Streets.—Founded in 1823 as the Medical College of South Carolina. In 1832 it was chartered with the present title. Classes were graduated in 1825 and in all subsequent years except 1861 to 1865, inclusive. In 1912 by legislative enactment became a state institution. It has a faculty of 10 professors and 34 lecturers, instructors, etc., a total of 44. The course covers four years of eight months each. The total fees each of the first three years are $100 and $75 for the fourth year. The Dean is Dr. Robert Wilson. Total enrolment for 1912-13 was 118; graduates, 30. The ninety-first session begins Oct. 1, 1913, and ends June 4, 1914.

SOUTH DAKOTA

South Dakota, population 583,888, has one medical college, the University of South Dakota College of Medicine, located at Vermilion, a city of 2,147 people.

Vermilion

UNIVERSITY OF SOUTH DAKOTA COLLEGE OF MEDICINE.—Organized in 1907. Offers only the first two years of the medical course. Two years work in a college of liberal arts is required for admission. The fees are $60 each year. The faculty numbers 9. The Dean is Christian P. Lommen, B.S. The total registration for 1912-13 was 13. The seventh session begins Sept. 16, 1913, and ends June 11, 1914.

TENNESSEE

Tennessee, population 2,184,789, has five medical colleges. Of these Vanderbilt University Medical Department and Meharry Medical College are situated in Nashville, a city with a population of 106,476. Knoxville, population 37,758, contains one college, the Tennessee Medical College. The Medical Department of the University of Tennessee and the University of West Tennessee are located in Memphis, population 136,363.

Knoxville

MEDICAL DEPARTMENT OF LINCOLN MEMORIAL UNIVERSITY, Cleveland Street and Dameron Avenue.—Organized in 1889 as the Tennessee Medical College. Affiliated with the Lincoln Memorial University since 1906, assumed present title and became an integral part of the university in 1909. The first class graduated in 1890. It has a faculty of 26 professors and 10 assistants, a total of 36. The curriculum covers four years of seven months each. Fees: Tuition, each year, $100; matriculation fee, $5; graduation fee, $25. The Dean is Dr. Chas. P. McNabb. The total registration for 1912-13 was 98; graduates, 19. The twenty-fifth session begins Sept. 23, 1913, and ends May 20, 1914.

Memphis

UNIVERSITY OF TENNESSEE COLLEGE OF MEDICINE, three buildings, 879 Madison Avenue, 880 Monroe Avenue, and 718 Union Avenue.—Organized 1876 at Nashville as Nashville Medical College. Became Medical Department University of Tennessee 1879. First class graduated 1877 and a class graduated each subsequent year. In 1909 it united with the Medical Department of the University of Nashville to form the joint Medical Department of the Universities of Nashville and Tennessee. This union was dissolved in 1911. The Trustees of the University of Nashville by formal action of that Board named the University of Tennessee College of Medicine as its legal successor in medical teaching, transferring all of its college and hospital equipment to the successor. This college then removed to Memphis, where it united

with the College of Physicians and Surgeons. The Memphis Hospital Medical College was merged in 1913. The Dean is Dr. Hubert Thomas Brooks. Total registration in the combined schools in 1912-13 was 383; graduates, (Univ. of Tenn.) 37 and (M.H.M.C.) 87; total 124. The next session begins Sept. 22, 1913, and ends June 5, 1914.

MEDICAL DEPARTMENT OF THE UNIVERSITY OF WEST TENNESSEE, Colored, 1190 South Phillips Place.—Organized in 1900. The first class graduated in 1904 and a class graduated each subsequent year. It has a faculty of 18. The course is four years of thirty weeks each. The fees are $55 per year; graduation $10 extra. The Dean is Dr. M. V. Lynk. Registration for 1912-13 was 45; graduates, 13. The fourteenth session begins Sept. 15, 1913, and ends May 1, 1914.

Nashville

VANDERBILT UNIVERSITY MEDICAL DEPARTMENT.—This school was founded in 1874. The first class graduated in 1875. The faculty consists of 25 professors and 40 lecturers, a total of 65. The course covers four years of nearly eight months each. The total fees for each of the first three years are $150, and for the fourth year, $175. The Secretary is Dr. L. E. Burch. The total registration for 1912-13 was 365; graduates, 71. The 40th session begins Sept. 18, 1913, and ends May 12, 1914.

MEHARRY MEDICAL COLLEGE, Colored. Maple and Chestnut Streets.—This school was organized in 1876 and is the Medical Department of Walden University. The faculty is made up of 13 professors and 15 instructors, demonstrators, etc., 28 in all. The work embraces four years of thirty weeks each. The total fees for each of the first three years are $60 and for the fourth year, $75. The Dean is Dr. G. W. Hubbard. Total registration for 1912-13 was 322; graduates, 88. The 38th session begins Sept. 10, 1913, and ends April 21, 1914.

TEXAS

Texas, population 3,696,542 has four medical colleges. The University of Texas Department of Medicine is located at Galveston, a city of 36,981 inhabitants. The Fort Worth School of Medicine is at Forth Worth, population 73,312. The Baylor University College of Medicone and the Southern Methodist University Medical College are situated in Dallas, population 92,104.

Dallas

BAYLOR UNIVERSITY COLLEGE OF MEDICINE, 435-37 South Ervay Street.—Organized in 1900 as the University of Dallas Medical Department. In 1903 it took its present name and became the Medical Department of Baylor University at Waco. It acquired the charter of Dallas Medical College in 1904. The first class graduated in 1901. The faculty numbers 47. Entrance requirement is one year of college work in addition to a four-year high school education. The course is four years of seven months each. The fees are $110 each year; matriculation fee of $5, paid but once, graduation fee, $15. The Dean is Dr. E. H. Cary. Total registration for 1912-13 was 91; graduates, 21. The 14th session begins Sept. 29, 1913, and ends May 28, 1914.

SOUTHERN METHODIST UNIVERSITY MEDICAL COLLEGE.—Organized in 1903 as the Southwestern University Medical College. Name changed as above in 1912. The first class graduated in 1904. It has a faculty of 33 professors and 4 instructors, assistants, etc., a total of 37. The course of instruction covers four years of eight months each. The fees for the four years are, respectively, $110, $105, $100 and $125. The Dean is Dr. John O. McReynolds. Total registration for 1912-13 was 65; graduates, 14. The tenth session begins Oct. 1, 1913, and ends May 29, 1914.

FORT WORTH SCHOOL OF MEDICINE, Calhoun and Fifth Streets.—Organized in 1894 as the Medical Department of Fort Worth University. In 1912 the latter institution changed its name to Texas Christian University. The first class graduated in 1895. Present title in 1911. It has a faculty of 13 professors and 46 lecturers, assistants, etc., in all 59. The course covers four years of seven and a half months each. The total fees for each of the four years, respectively, are $114, $113, $108 and $125. The Dean is Dr. I. C. Chase. The total registration for 1912-13 was 60; graduates, 12. The 20th session begins Sept. 8, 1913, and ends June 4, 1914.

Galveston

UNIVERSITY OF TEXAS DEPARTMENT OF MEDICINE, on the Strand, between Ninth and Tenth Streets.—Organized in 1891. The first class graduated in 1892. It has a faculty of 17 professors and 10 lecturers, a total of 27. The curriculum embraces four years of eight months each. The entrance requirement is one year of collegiate work in addition to a four-year high school education. The total fees for the four years, respectively, are $61, $31, $21 and $6. The Dean is Dr. William S. Carter. Total registration for 1912-13 was 153; graduates, 43. The 23d session begins Oct. 1, 1913, and ends May 30, 1914.

UTAH

Utah, population 373,351, has one medical college, the Medical Department of the University of Utah, situated at Salt Lake City, which has 92,777 people.

Salt Lake City

UNIVERSITY OF UTAH SCHOOL OF MEDICINE.—Organized in 1906. Gives only first two years of the medical course. Each course covers thirty-six weeks. Two years of collegiate work are required for admission. The medical faculty consists of 9 professors and 5 lecturers and assistants, a total of 14. The fees are $55 each year. Total registration for 1912-13 was 16. The seventh session begins Sept. 15, 1913, and ends May 29, 1914.

VERMONT

Vermont, population 355,956, has one medical school, located at Burlington, a town of 20,468 people.

Burlington

UNIVERSITY OF VERMONT COLLEGE OF MEDICINE, Pearl Street, College Park.—Organized with complete course in 1822. Classes graduated in 1823 to 1836, inclusive, when the school was suspended. It was reorganized in 1853 and classes were graduated in 1854 and in all subsequent years. The faculty numbers 48. One year of college work is required for admission. The course of study covers four years of nine months each. The total fees for each of the first three years are $140, and $165 for the fourth year. The Dean is Dr. H. C. Tinkham. The total registration for 1912-13 was 140; graduates, 37. The next session begins Sept. 24, 1913, and ends June 24, 1914.

VIRGINIA

Virginia, population 2,061,612, has two medical colleges, one, the Medical Department of the University of Virginia, situated in Charlottesville, population 6,765, and the Medical College of Virginia at Richmond, population 127,628.

Charlottesville

UNIVERSITY OF VIRGINIA DEPARTMENT OF MEDICINE.—Organized in 1827. Classes were graduated in 1828 and in all subsequent years except 1865. It has a faculty of 14 professors and 18 lecturers, instructors, assistants, etc., a total of 32. The requirements for admission are the completion of a four years' high school course, or its equivalent, and a year of college work devoted to chemistry, physics and biology. Total fees each year are $140. The Dean is Dr. R. H. Whitehead. The total registration for 1912-13 was 91, graduates, 14. The eighty-fifth session begins Sept. 11, 1913, and ends June 17, 1914.

Richmond

MEDICAL COLLEGE OF VIRGINIA, Marshall and College Streets.—Organized in 1838 as the Medical Department of Hampden Sydney College. Present title was taken in 1854. In 1913 the University College of Medicine was merged. Classes were graduated in 1840 and in all subsequent years. It has a faculty of 46 professors and 76 lecturers, instructors, etc., a total of 122. The requirement for admission is a full four-year high school education. The course embraces four years of eight months each. Fees, $164 each year; graduation fee, $30. The Dean is Dr. Christopher Tompkins. The total registration for the college year 1912-13 in the two colleges was 416; graduates, 83. The seventy-sixth session begins Sept. 16, 1913, and ends June 2, 1914.

WEST VIRGINIA

West Virginia, population 1,221,119, has one medical college, the School of Medicine of West Virginia University, which offers the first two years of the medical course. It is located at Morgantown, a city of 9,150 population.

Morgantown

WEST VIRGINIA UNIVERSITY SCHOOL OF MEDICINE.—Organized in 1902, and gives only the first two years of the medical course. One year of work in an approved college of liberal arts is required for admission. Sessions extend through nine months. The faculty numbers 9. Fees: For residents of the state, $25 each year; for non-residents, $50. The Dean is Dr. John N. Simpson. The total registration for 1912-13 was 8. The next session begins Sept. 15, 1913, and ends June 17, 1914.

WISCONSIN

Wisconsin, population 2,333,860, has two medical colleges, the Medical Department of the University of Wisconsin, which teaches the first two years of the medical course and is located at Madison, a city of 25,531 people, and the Marquette University School of Medicine, located at Milwaukee, a city of 373,857 people.

Madison

UNIVERSITY OF WISCONSIN COLLEGE OF MEDICINE.—Organized in 1907. Gives only the first two years of the medical course. For matriculation at least two years in a college of arts and science or an equivalent training are required, including two years of Latin, a reading knowledge of French and German, and at least a year's work in physics, chemistry and biology. It has a faculty of 14 professors and 10 lecturers, instructors, etc., a total of 24. Tuition fees: For residents of the state, $80 each year; for non-residents, $154. The Dean is Dr. Charles R. Bardeen. The registration for 1912-13 was 66. The sixth session begins Sept. 25, 1913, and ends June 17, 1914.

Milwaukee

MARQUETTE UNIVERSITY SCHOOL OF MEDICINE, Fourth Street and Reservoir Avenue.—Organized in December, 1912, by the merger of the Milwaukee Medical College and the Wisconsin College of Physicians and Surgeons. It has a faculty of 71 professors and 45 assistants, instructors, etc., a total of 116. Beginning this fall the entrance requirements include, in addition to a four-year high school education, one year of college work including courses in physics, chemistry, biology and a modern language. Beginning with the session of 1914-15, two years of college work will be required. The

curriculum is for four years of thirty-four weeks each. The total fees for the four years, respectively, are $165, $160, $155 and $155. The Dean is Dr. Louis F. Jermain. The registration for 1912-13 was 283; graduates, 78. The second session begins Oct. 1, 1913, and ends June 18, 1914.

PHILIPPINE ISLANDS

The Philippine Archipelago, having a population of 7,635,436, has two medical colleges, the University of the Philippines College of Medicine and Surgery and the Medical Faculty of the University of St. Thomas. They are located in the city of Manila, which in 1903 had a population of 219,928.

Manila

UNIVERSITY OF THE PHILIPPINES COLLEGE OF MEDICINE AND SURGERY, Manila.—Organized in 1907 as the Philippine Medical School, under the support of the government of the Philippine Islands. Present title in 1910. The faculty numbers 53. In 1914 and thereafter two years of collegiate work leading to the degree of Bachelor of Arts will be required for admission. The course extends over five years of nine months each with an additional sixth year of intern service. The Dean is Dr. William E. Musgrave. The total registration for 1912-13 was 72; graduates, 8. The seventh session begins July 1, 1913, and ends April 2, 1914.

CANADA

The Dominion of Canada has eight medical colleges, all of which now require a four-year course, including in the first year courses in physics, chemistry and biology. This course is practically equal to that in the colleges of this country which require one year of college work for admission, including the science courses named. None of the Canadian colleges has a fixed minimum requirement of two years of collegiate work or its equivalent preliminary to or as a part of the medical course.

Manitoba

MANITOBA MEDICAL COLLEGE, Winnipeg.—It is the Medical Faculty of the University of Manitoba. Organized in 1883, first class graduated in 1886 and a class graduated each subsequent year. The faculty numbers 54. The fees are $155 for the first year and $150 for each subsequent year. The entire course covers five years, the first year including courses in physics, chemistry and biology. The Dean is Dr. H. H. Chown, 263 Broadway, Winnipeg. Total registration for 1912-13 was 154; graduates, 28. The next session begins Sept. 24, 1913, and ends May 1, 1914.

Nova Scotia

DALHOUSIE UNIVERSITY MEDICAL FACULTY, Halifax, N. S.—Organized in 1867. Incorporated as the Halifax Medical College in 1875. Reorganized as an examining faculty, separate from the Halifax Medical College in 1885. In 1911, in accordance with an agreement between the Governors of Dalhousie University and the Corporation of the Halifax Medical College, the work of the latter institution was discontinued and a full teaching faculty was established by the University. By an arrangement between Dalhousie University and the Provincial Medical Board of Nova Scotia, the final professional examinations are conducted conjointly by the University and the Board, and candidates may qualify at the same time for their academic degrees and the provincial license. First class graduated in 1872. It has a faculty of 28 professors, lecturers and demonstrators. Requires matriculation examination and a graded course of five years, including preliminary courses in physics, chemistry and biology. Fees are $100 each year. Total registration for 1912-13 was 78; graduates, 7. The Secretary is Dr. A. W. H. Lindsay, 319 Pleasant Street, Halifax, N. S. The next session begins Aug. 28, 1913, and ends April 30, 1914.

Ontario

UNIVERSITY OF TORONTO FACULTY OF MEDICINE, Toronto.—Organized 1843 as the Medical Faculty of King's College. Abolished in 1853. Reestablished in 1887. In 1903 it absorbed Trinity Medical College. The course of study covers five years of eight months each, the first year including courses in physics, chemistry and biology. It has a faculty of 46 professors and 107 lecturers, associates, etc., a total of 153. The fees are $150 each year. The Secretary is Dr. A. Primrose. The total registration for 1912-13 was 533; graduates, 85. The next session begins Sept. 30, 1913, and ends May 31, 1914.

MEDICAL FACULTY OF QUEEN'S UNIVERSITY, Kingston.—Organized 1854, first class graduated in 1855, and a class graduated each subsequent year. The faculty was originally a department of the University, but a separation took place in 1866, when the school was conducted under the charter of the Royal College of Physicians and Surgeons at Kingston. In 1892 the school again became an integral part of Queen's University. The faculty includes 25 professors and 14 assistants, instructors, etc., a total of 39. The fees amount to $105 each year; fee for M.D., C.M. degrees, $30. The course covers five years of seven months each, the first year including courses in physics, chemistry and biology. The total registration in 1912-13 was 251; graduates, 40. The Dean is Dr. J. C. Connell. The next session begins Sept. 15, 1913, and ends April 29, 1914.

MEDICAL DEPARTMENT OF WESTERN UNIVERSITY, London.—Organized in 1881, first class graduated in 1883 and a class graduated each year subsequently. The faculty numbers 30. The course is five years of seven and a half months each, the first year including courses in physics, chemistry and biology. The tuition is $100 each year. The Registrar is Dr. W. E. Waugh. Total registration for 1912-13 was 108; graduates, 27. The next session begins Sept. 17, 1913, and ends May 3, 1914.

Quebec

MEDICAL FACULTY OF MCGILL UNIVERSITY.—Founded 1824 as Montreal Medical Institution; became the Medical Faculty of McGill University in 1829; first class graduated under the university auspices in 1833. No session between 1836-39 owing to political troubles. In 1905 it absorbed the Faculty of Medicine of the University of Bishop College. The course extends over five years of eight months each, including the preliminary year devoted to physics, chemistry and biology. The faculty numbers 119. The total fees are $150 for each of the first four years and $190 for the fifth. The total registration for 1912-13 was 365; graduates, 61. The Registrar is Dr. John W. Scane. The next session begins Oct. 1, 1913, and ends June 9, 1914.

LAVAL UNIVERSITY MEDICAL DEPARTMENT, Quebec.—The Quebec School of Medicine, organized in 1848, became in 1852 Medical Department of Laval University; first class graduated in 1855, and a class graduated each subsequent year. The faculty numbers 24. The fees are $60 each year. The course extends over five years, the first year including courses in physics, chemistry and biology. The Dean is Dr. Michael Joseph Ahren, Quebec. Total registration for 1912-13 was 66; graduates, 22. The next session begins Sept. 10, 1913, and ends June 1, 1914.

MONTREAL SCHOOL OF MEDICINE AND SURGERY, Montreal.—Organized in 1878 as the Medical Department of Laval University. Present name assumed in 1911. First class graduated in 1879. The faculty numbers 60. The course extends over five years. The Dean is Dr. E. P. Lachapelle. The total registration for 1912-13 was 180; graduates, 35. The next session begins Oct. 1, 1913, and ends June 20, 1914.

LIFE CHART OF MEDICAL COLLEGES

The chart shown on pages 578 to 581 shows by a series of vertical dark bands the years during which each of 308 medical colleges in the United States were in existence. Viewing the page as you open the book each of the horizontal lines represents the beginning of a year and figures for every fifth year from 1810 to 1910 are given at the right and left of each page. The five colleges organized prior to 1810 have their life lines prior to that date shown in a special section on page 580. To the right of the fourth page of the chart, figures are given following each year showing the number of colleges existing in that particular year. At the bottom of each page the name of each college is given opposite its vertical dark band and also the year it was organized and, if extinct, the year it was closed. A break in any dark band connected with a dotted line indicates that during that time the college was suspended. Such suspensions, as will be noted in the chart, were common among the medical schools of the South during the Civil War (1861-1865). Shaded lines indicate (a) that only the first two years of the medical course were offered; (b) that medical degrees were granted by the University as an examining body although no actual medical teaching was done; (c) that no degrees were granted; (d) that a preparatory course only was given; (e) that only the last two or clinical years were offered; (f) that degrees bearing the name of the university were granted for work done in another medical school, which also granted degrees; and (g) that the college was reported as not in good standing with its home state licensing board. The colleges have been so grouped as to bring together those which have been merged. The bands representing all such colleges are connected by pen lines. The grouping of the Kansas, Kentucky and Indiana colleges well illustrate this arrangement. Besides the 308 medical colleges included in this chart, there are 118 other institutions which are sometimes listed among medical schools. Among these colleges are some which apparently never held any sessions; others which had no graduates; others which, according to reports, were distinctly fraudulent or out-and-out diploma-mills; others were not legally chartered or otherwise were not recognized by their home licensing boards; others were apparently examining boards, and for others it is uncertain whether the students graduated were doctors or nurses. None of these institutions were deemed worthy of being included in the chart. A complete list[1] of these institutions follows:

IRREGULAR COLLEGES NOT INCLUDED IN CHART

ARKANSAS

Bethel Medical Department, Southwestern University, Little Rock.
Medical Department of Sulphur Rock College, Sulphur Rock.
Texas Health College, Hot Springs.*

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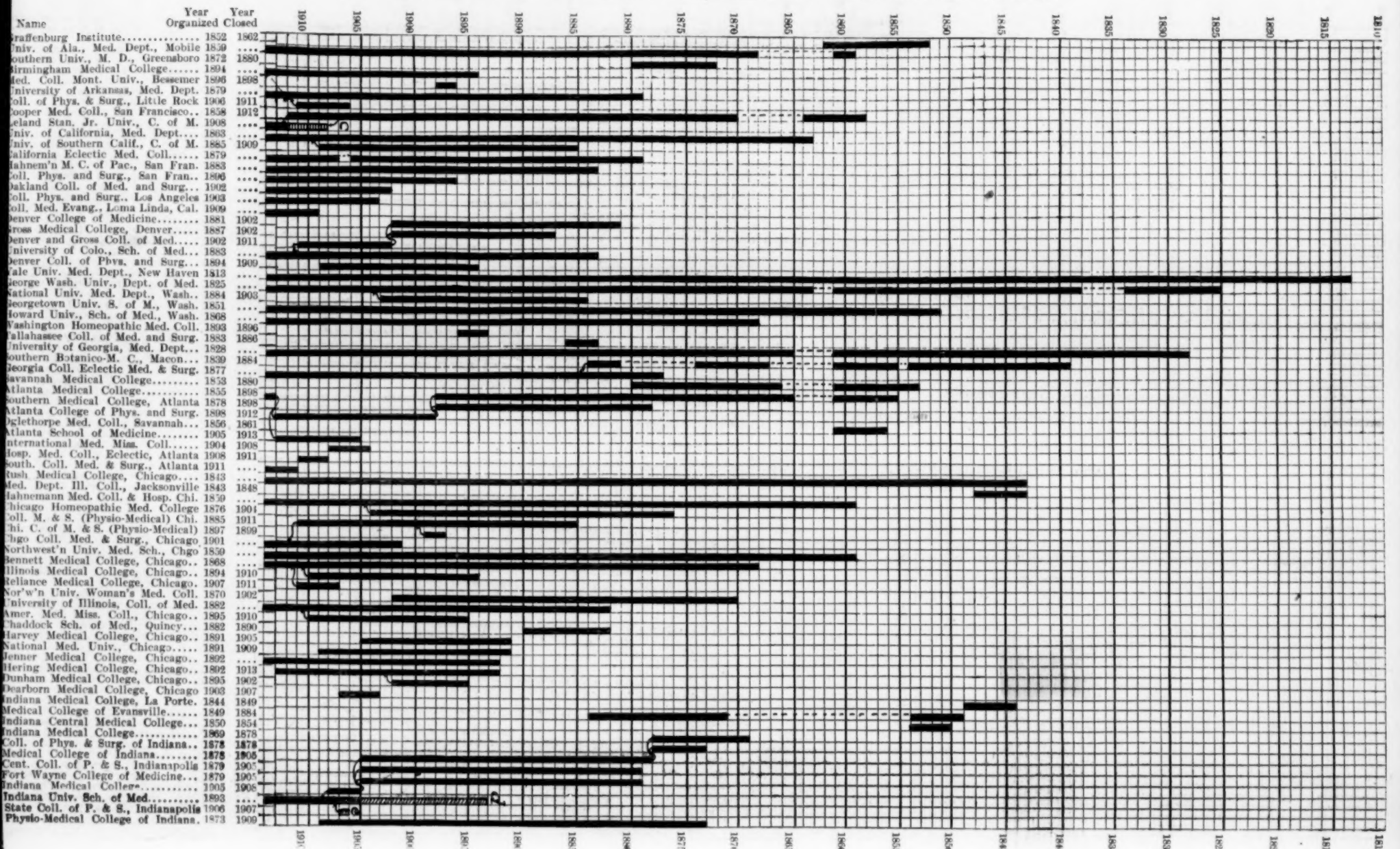
1. These institutions are more fully described in the American Medical Directory.

LIFE CHART OF THE MEDICAL COLLEGES OF THE UNITED STATES


Name
Year Organized
Year Closed
Graffenburg Institute 1852 1862
Univ. of Ala., Med. Dept., Mobile 1859 ....
Southern Univ., M. D., Greensboro 1872 1880
Birmingham Medical College 1894 ....
Med. Coll. Mont. Univ., Bessemer 1896 1898
University of Arkansas, Med. Dept. 1879 ....
Coll. of Phys. & Surg., Little Rock 1906 1911
Cooper Med. Coll., San Francisco 1858 1912
Leland Stan. Jr. Univ., C. of M. 1908 ....
Univ. of California, Med. Dept. 1863 ....
Univ. of Southern Calif., C. of M. 1885 1909
California Eclectic Med. Coll. 1879 ....
Hahnem'n M. C. of Pac., San Fran. 1883 ....
Coll. Phys. and Surg., San Fran. 1896 ....
Oakland Coll. of Med. and Surg. 1902 ....
Coll. Phys. and Surg., Los Angeles 1903 ....
Coll. Med. Evang., Loma Linda, Cal. 1909 ....
Denver College of Medicine 1881 1902
Gross Medical College, Denver 1887 1902
Denver and Gross Coll. of Med. 1902 1911
University of Colo., Sch. of Med. 1883 ....
Denver Coll. of Phys. and Surg. 1894 1909
Yale Univ. Med. Dept., New Haven 1813 ....
George Wash. Univ., Dept. of Med. 1825 ....
National Univ. Med. Dept., Wash. 1884 1903
Georgetown Univ. S. of M., Wash. 1851 ....
Howard Univ., Sch. of Med., Wash. 1868 ....
Washington Homeopathic Med. Coll. 1893 1896
Tallahassee Coll. of Med. and Surg. 1883 1886
University of Georgia, Med. Dept. 1828 ....
Southern Botanico-M. C., Macon 1839 1884
Georgia Coll. Eclectic Med. & Surg. 1877 ....
Savannah Medical College 1853 1880
Atlanta Medical College 1855 1898
Southern Medical College, Atlanta 1878 1898
Atlanta College of Phys. and Surg. 1898 1912
Oglethorpe Med. Coll., Savannah 1856 1861
Atlanta School of Medicine 1905 1913
International Med. Miss. Coll. 1904 1908
Hosp. Med. Coll., Eclectic, Atlanta 1908 1911
South. Coll. Med. & Surg., Atlanta 1911 ....
Rush Medical College, Chicago 1843 ....
Med. Dept. Ill. Coll., Jacksonville 1843 1848
Hahnemann Med. Coll. & Hosp. Chi. 1850 ....
Chicago Homeopathic Med. College 1876 1904
Coll. M. & S. (Physio-Medical) Chi. 1885 1911
Chi. C. of M. & S. (Physio-Medical) 1897 1899
Chgo Coll. Med. & Surg., Chicago 1901 ....
Northwest'n Univ. Med. Sch., Chgo 1859 ....
Bennett Medical College, Chicago 1868 ....
Illinois Medical College, Chicago 1894 1910
Reliance Medical College, Chicago 1907 1911
Nor'w'n Univ. Woman's Med. Coll. 1870 1902
University of Illinois, Coll. of Med. 1882 ....
Amer. Med. Miss. Coll., Chicago 1895 1910
Chaddock Sch. of Med., Quincy 1882 1890
Harvey Medical College, Chicago 1891 1905
National Med. Univ., Chicago 1891 1909
Jenner Medical College, Chicago 1892 ....
Hering Medical College, Chicago 1892 1913
Dunham Medical College, Chicago 1895 1902
Dearborn Medical College, Chicago 1903 1907
Indiana Medical College, La Porte 1844 1849
Medical College of Evansville 1849 1884
Indiana Central Medical College 1850 1854
Indiana Medical College 1869 1878
Coll. of Phys. & Surg. of Indiana 1878 1878
Medical College of Indiana 1878 1905
Cent. Coll. of P. & S., Indianapolis 1879 1903
Fort Wayne College of Medicine 1879 1905
Indiana Medical College 1905 1908
Indiana Univ. Sch. of Med. 1893 ....
State Coll. of P. & S., Indianapolis 1906 1907
Physio-Medical College of Indiana 1873 1909
1910 1905 1900 1895 1890 1885 1880 1875 1870 1865 1860 1855 1850 1845 1840 1835 1830 1825 1820 1815 1810

Name
Year Organized
Year Closed
1810
1815
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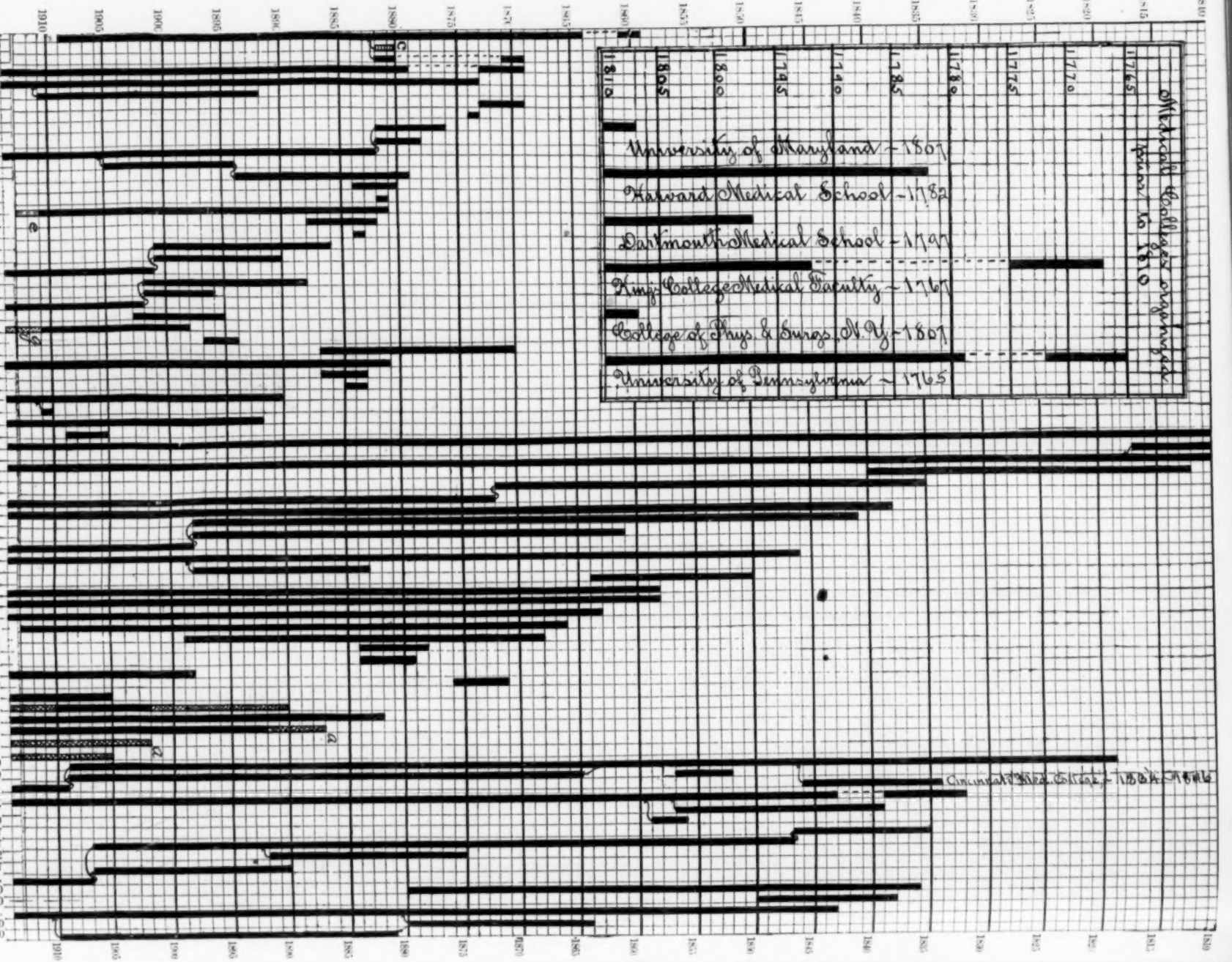
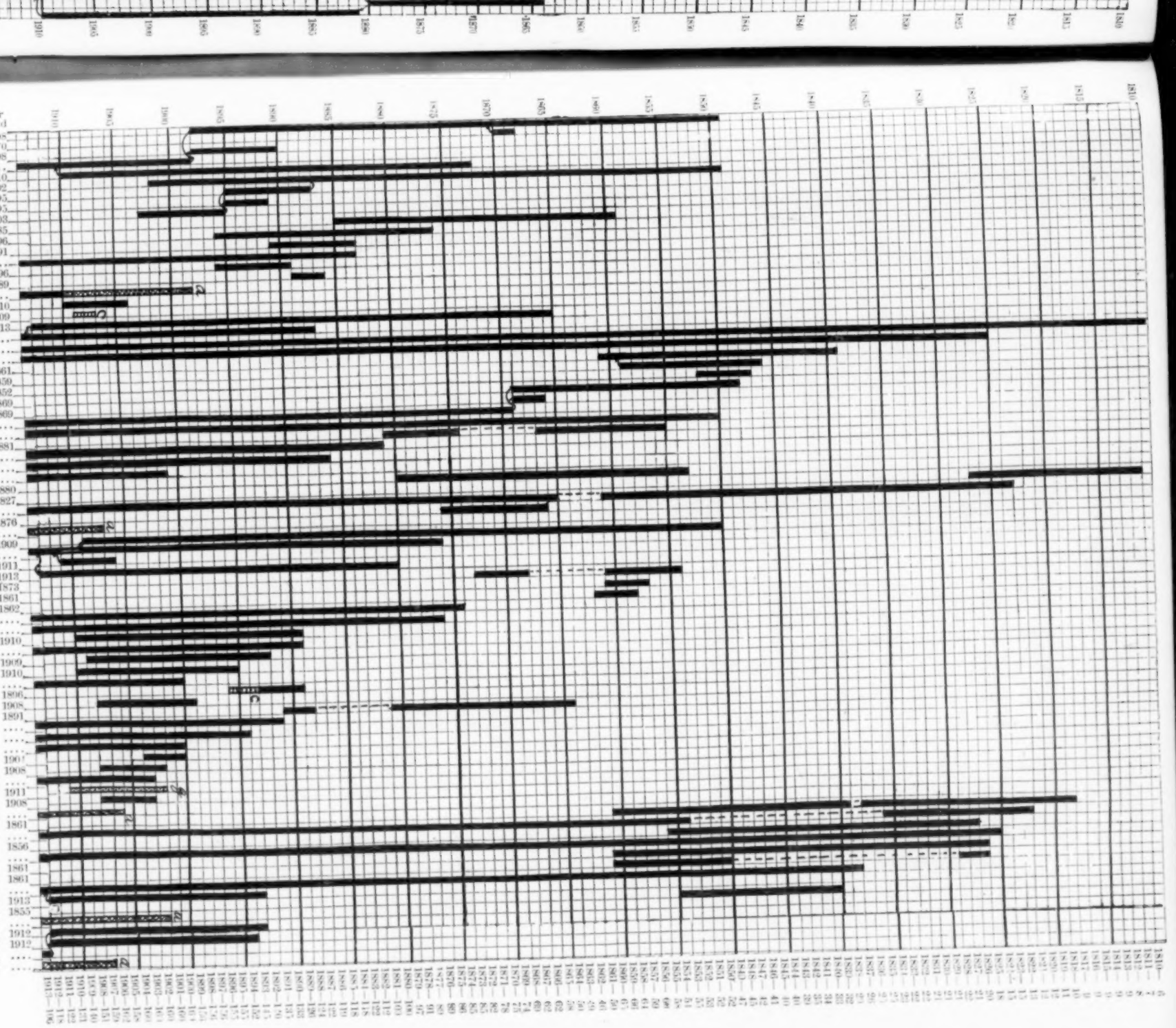
LIFE CHART OF THE MEDICAL COLLEGES OF THE UNITED STATES—*Continued*

Name	Year Organized	Year Closed
omeopathic Med. Coll. of Missouri	1859	1909
ering Medical College, St. Louis.	1880	1882
t. Louis Coll. of Homeo. P. & S.	1869	1882
t. Louis Coll. of Phys. & Surg...	1869	....
merican Med. Coll., St. Louis....	1873	....
arnes Medical College, St. Louis..	1892	1911
edical College of Kansas City....	1869	1873
t. Louis Hahnemann Med. Coll...	1873	1874
t. Joseph Hospital Medical College	1876	1889
oll. of Phys. & Surg. of St. Joseph	1878	1882
nsworth Med. Coll., St. Joseph..	1882	....
entral Medical College, St. Joseph	1894	1905
orthwestern Med. Coll., St. Joseph	1879	1894
plin College of Phys. and Surg...	1880	1881
plin Medical College.....	1881	1882
niversity Med. Coll., Kansas City	1881	1913
ansas City Hospital Coll. of Med.	1882	1888
oman's Medical College, St. Louis	1883	1884
eaum'nt Hosp. Med. Coll., St. Louis	1886	1901
arion-Sims Coll. of Med., St. Louis	1890	1901
t. Louis University, Sch. of Med.	1901	....
ansas City Homeo. Med. Coll.....	1888	1902
ahnemann M. C. Kans. City Univ.	1896	1902
ansas City Hahnemann Med. Coll.	1902	....
oman's Med. Coll., Kansas City..	1895	1903
clectic Med. Univ., Kansas City..	1898	....
t. Louis Woman's Medical College	1894	1896
niv. of Nebraska, Coll. of Med...	1870	1887
niv. Nebr., Coll. of Med., Omaha..	1881	....
. Nebr., C. of M., Homeo. Dept.	1883	1887
. Nebr., C. of M., Eclectic Dept.	1883	1885
ncoln Medical College, Eclectic..	1890	....
ebraska Medical College, Eclectic	1910	1911
hn A. Creighton Medical College	1892	....
ebraska College of Medicine.....	1905	1909
artmouth Medical School, Hanover	1797	....
ing's College, Medical Faculty...	1767	1817
olumbia Univ., C. of P. and S...	1807	....
oll. of P. & S. of W. D. of N. Y.	1812	1840
eneva Medical College.....	1835	1872
yracuse University Coll. of Med...	1872	....
lbany Medical College.....	1838	....
ew York University Med. Coll....	1841	1898
ellevue Hospital Medical College.	1861	1898
niv. & Bellevue Hosp. Med. Coll.	1898	....
niversity of Buffalo, Med. Dept...	1846	....
iagara University Med. Dept.....	1883	1898
ew York Medical College.....	1850	1864
ong Island College Hospital.....	1858	....
. Y. Homeo. Med. Coll. & Hosp.	1858	....
. Y. Med. Coll. & Hosp. Women	1863	....
clectic Med. Coll. of C. of N. Y.	1866	1913
. M. C. of N. Y. I. for W. & C.	1868	1899
. S. Med. Coll., New York.....	1878	1884
oll. of P. & S., Homeo., Buffalo..	1879	1884
ornell Univ., Med. Coll., N. Y...	1898	....
. Y. Free Med. Coll. for Women	1871	1876
ordham Univ., C. of M., N. Y...	1905	....
niv. of N. Carolina, Med. Dept.	1890	....
eonard Medical School, Raleigh..	1882	....
orth Carolina Medical College....	1887	....
ake Forest School of Medicine...	1902	....
niv. of N. Dak., Coll. of Med.....	1905	....
edical College of Ohio.....	1819	1909
iami Medical College, Cincinnati	1852	1909
hio-Miami M. C. of U. Cincinnati	1909	....
clectic Med. Coll., Cincinnati....	1892	....
mer. M. C., Eclectic, Cincinnati	1839	1857
clectic C. of M. & S., Cincinnati	1856	1859
illoughby Univ. Med. Dept.....	1835	1847
arling Medical College, Columbus	1847	1907
olumbus Medical College.....	1875	1892
hio Medical University.....	1890	1907
arling-Ohio Med. Coll., Columbus	1907	....
hysio-Medical College, Cincinnati	1836	1880
otanico-Medical College of Ohio..	1838	1850
est. Reserve U., School of Med...	1843	....
niv. of Wooster, M. D., Cleveland	1864	1880
leveland Coll. of Phys. & Surg...	1881	1910



Name	Year Organized	Year Closed
Cleveland Univ. of Med. & Surg...	1849	1898
Homeo. M. C., Women, Cleveland	1868	1870
Cleveland Med. Coll., Homeopathic	1890	1898
Cleveland-Pulte Medical College...	1898	....
Pulte Medical College, Cincinnati..	1872	1910
Cincinnati Coll. of Med. & Surg...	1849	1902
Woman's Med. Coll. of Cincinnati.	1887	1895
Presby. Hosp. and Women's Med. C.	1891	1895
Laura Memorial Women's Coll....	1895	1903
Physio-Medical Inst., Cincinnati...	1859	1885
Amer. Ecle. Med. Coll., Cincinnati	1876	1896
Northwestern Ohio Medical College	1883	1891
Toledo Medical College.....	1883	....
Nat'l Nor. Univ. C. of M., Lebanon	1889	1896
Dayton Medical University.....	1886	1889
Univ. of Okla., Medical School....	1898	....
Epworth Coll. of Med., Okla. City	1904	1910
Oklahoma Medical College.....	1907	1909
Willamette U. Med. Dept., Salem..	1865	1913
University of Oregon, Med. Dept...	1887	....
Univ. of Penna., Dept. of Med...	1765	....
Jefferson Med. Coll., Philadelphia.	1825	....
Pennsylvania Medical College	1839	1861
Phila. Coll. of Med. and Surg.....	1846	1859
Franklin Med. Coll., Philadelphia.	1847	1852
Homeopathic Med. Coll. of Penna.	1848	1869
Hahnemann Med. Coll. of Phila...	1896	1869
Hahne. Med. Coll. & Hosp., Phila.	1869	....
Woman's Med. Coll. of Penna.....	1850	....
Penn Med. Univ., Philadelphia....	1855	1881
Medico-Chirurgical Coll. of Phila.	1881	....
Univ. of Pittsburgh, Sch. of Med....	1886	....
Temple University Med. Dept.....	1901	....
Phila. Univ. of Med. and Surg.....	1853	1880
Brown Univ., M. D., Providence..	1811	1827
Med. Coll. of State of S. Carolina	1823	....
Univ. of S. Carolina, Med. Dept.	1866	1876
Univ. of S. Dakota, Coll. of Med.	1907	....
Univ. of Nashville, Med. Dept.....	1850	1909
Univ. of Tennessee, Med. Dept.....	1876	....
Coll. of Phys. and Surg., Memphis	1906	1911
Memphis Hospital Medical College	1880	1913
Memphis Medical College.....	1854	1873
Eclectic Med. Inst., Memphis.....	1857	1861
Shelby Medical College, Nashville..	1858	1862
Vanderbilt Univ., M. D., Nashville	1874	....
Meharry Medical College, Nashville	1876	....
Chattanooga Medical College	1889	1910
Lincoln Mem. Univ., Knoxville....	1889	....
University of the South, Med. Dept.	1892	1909
Knoxville Medical College.....	1895	1910
Univ. of W. Tennessee, Med. Dept.	1900	....
Hannibal Medical College, Memphis	1889	1896
Chattanooga National Med. Coll...	1899	1908
Texas Medical College and Hospital	1864	1891
University of Texas, Med. Dept....	1891	....
Forth Worth School of Medicine..	1894	....
Baylor University, Coll. of Med...	1900	....
Dallas Medical College.....	1900	1907
Physio-Medical College of Texas...	1902	1908
Southern Meth. Univ., Dallas.....	1903	....
Gate City Med. Coll., Texarkana..	1902	1911
Coll. of Phys. and Surg., Dallas..	1903	1908
University of Utah, Dept. of Med.	1906	....
Castleton Medical College.....	1818	1861
Univ. of Vermont, Coll. of Med...	1823	....
Vermont Medical College.....	1827	1856
Univ. of Virginia, Dept. of Med...	1825	....
Med. Sch. of the Valley of Virginia	1826	1861
Winchester Medical College.....	1826	1861
Medical College of Virginia.....	1838	....
Univ. Coll. of Med., Richmond....	1893	1913
Randolph Macon College.....	1840	1855
West Virginia Univ., Coll. of Med.	1902	....
Wisconsin Coll. of Phys. and Surg.	1893	1912
Milwaukee Medical College.....	1894	1912
Marquette University, Sch. of Med.	1912	....
Univ. of Wisconsin, Coll. of Med.	1907	....



CALIFORNIA

California Medical Society and College of Physicians, San Francisco.
Pacific Coast Regular College of Medicine, San Francisco.*

GEORGIA

Clark University, Medical Department, Atlanta.
Dalton Medical College, Dalton.
Middle Georgia Medical College, Griffin.
Thompsonian College, Barbourville.
Woman's Medical College of Georgia.

ILLINOIS

Chicago College of Science.*
Dutton Medical College, Chicago.*
Edinburg University, Chicago.*
German Academy of Physiatric Physicians, Chicago.*
German-American Homeopathic Medical College, Chicago.*
German College of Gynecology, Pediatrics and Obstetrics, Chicago.*
German College of Medicine and Obstetrics, Chicago.*
German Homeopathic Medical College, Chicago.*
German Medical College, Chicago.*
Illinois Health University, Chicago.*
Illinois Standard College of Medicine and Surgery, Chicago.
Independent Medical College, Chicago.*
International Medical Missionary Institute, Chicago.
Medical Department of the University of St. Charles.
Metropolitan Medical College, Chicago.*
National University of Illinois, Chicago.*

INDIANA

Indiana College of Medicine and Midwifery.*
University of Indiana, New Albany.*
University of Indianapolis.*
University of Medicine, Indianapolis.

IOWA

Council Bluffs Medical College.

KANSAS

Wichita Medical College.

KENTUCKY

Eclectic Medical College, Louisville.

MAINE

Druidic University of Maine, Lewiston.*
Eclectic Medical College of Maine, Lewiston.*
Portland School for Medical Instruction.

MARYLAND

Medico-Chirurgical and Theological College of Christ's Institute.*

MASSACHUSETTS

Bellevue Medical College of Massachusetts, Boston.*
Clark University, Medical Department, Worcester.
Excelsior Medical College, Boston.*
First Medical College of the American Health Society, Boston.*
Medical Department of the American University of Boston.*
New England University of Arts and Science, Boston.*
Reserved College of Physicians and Surgeons, Springfield.*

MICHIGAN

Detroit University of Medicine.
Detroit University of Rational Medicine and Surgery.
Michigan Eclectic Medical College, Detroit.
Michigan Homeopathic Medical College, Lansing.
Michigan Medical College, Lansing.
Michigan School of Homeopathy and Surgery, Detroit.

MINNESOTA

Winona Medical School, Preparatory.

MISSOURI

American Anthropological University of St. Louis.*
Hippocratean College of Medicine, St. Louis.*
Homeopathic Medical College of St. Louis.*
Missouri Eclectic Medical College, Kansas City.
Mo. School of Midwif. and Dis. of Women and Children, St. Louis.*
Occidental College of Physicians and Surgeons, Joplin.
St. Louis Eclectic Medical College.*
St. Louis Hygienic College of Physicians and Surgeons.

NEW HAMPSHIRE

New England University of Arts and Sciences, Manchester.*
University of New Hampshire, Department of Medicine, Nashua.*

NEW JERSEY

Central University of Medicine and Science, Jersey City.*
Hygieo-Therapeutic College, Bergen Heights.*
Livingston University, Haddonfield.*
Medical and Surgical College of the State of New Jersey.*

NEW YORK

American College of Medical Science, New York.
Brooklyn Academy of Medicine.
Buffalo College of Rational Medicine, Homeopathic.*
College of Medicine, Botanic, New York.*
Eclectic Medical Institute of New York, Rochester.
Edwards Medical College, New York.*
Excelsior Medical College, New York.*
Hamburg Canal College, Buffalo.*
Medical Faculty of Rutger's (Queen's) College, New York.*
Medical and Surgical Institute and Sanitarium, Buffalo.*
Metropolitan Medical College, Eclectic, New York.*
Mohawk Medical College, Buffalo.*
New York College of Magnetics.*
New York Hygelo-Therapeutic College, New York.*
New York Institute of Medical Science.*
New York Preparatory School of Medicine.*
New York Reformed Medical College, Eclectic.*
New York School of Medicine.
Preparatory Medical College, New York City and Poughkeepsie.
Randolph Eclectic Medical Institute, Rochester.
Rochester Eclectic Medical College.*
Syracuse Medical College, Eclectic, Rochester.*
Worcester Medical School, Eclectic, New York.*

NORTH CAROLINA

College of Physicians and Surgeons, Arlington.
Edinborough Medical College, Lumbertown.

OHIO

American Health College, Cincinnati.*
Hygeia Medical College, Cincinnati.*
International Electropathic Institution, Mentor.*
Medical University of Ohio, Cincinnati.*
Ohio College of Medicine and Midwifery, Cincinnati.*
Physio-Electic Medical College, Cincinnati.
Toledo School of Medicine.
Zanesville Academy of Medicine.*

OKLAHOMA

Twentieth Century Physio-Medical College, Guthrie.*

PENNSYLVANIA

American University of Pennsylvania (Eclectic), Philadelphia.*
Eclectic Medical College of Pennsylvania, Philadelphia.*
Electropathic Institute, Philadelphia.*
Lincoln University, Medical Department, Oxford.
North American Acad. of the Homeopathic Healing Art, Allentown.
Thompsonian Medical College, Allentown.*

SOUTH CAROLINA

Charleston Medical School.

TENNESSEE

Jefferson Medical Association, Dandridge.

TEXAS

University of Medicine and Surgery, Dallas.
University of San Antonio, Medical Department.

UTAH

Medical Institution of Morgan City.

VERMONT

Trinity University College of Medicine and Surgery, Bennington.*
Union Medical Institute, Newbury.*
Vermont Medical College, Rutland.*

WASHINGTON

Northwestern College of Biochemistry, Spokane.*
University of Spokane Falls, College of Medicine.
University of Washington, Medical Department, Seattle.

WISCONSIN

Milwaukee College of Physicians and Surgeons.*
Wisconsin Eclectic Medical School.*

* Reports indicate these institutions were fraudulent or not in good standing with the home state licensing board.

STANDARDS OF THE COUNCIL ON MEDICAL EDUCATION OF THE AMERICAN MEDICAL ASSOCIATION

Essentials of an Acceptable Medical College

(Revised to August 1, 1913)

The following outline of the essentials of an acceptable medical college was issued by the Council on Medical Education of the American Medical Association for its suggestive value in the rapid development in progress among the medical colleges in the United States. It also represents the basis on which medical colleges are rated in the Council's classifications.

ADMISSION OF STUDENTS

1. A strict enforcement of all standards and requirements, the college itself to be held responsible for any instances in which they are not enforced.

[Since the product of the medical school depends largely on the quality of the students admitted, it is only reasonable that in its ratings hereafter, special emphasis be laid by the Council on the strictness and honesty by which the standards of admission and advanced standing are administered. By the admission of unfit students the school is handicapped from the very beginning and, in the opinion of the Council, deserves a low rating regardless of its equipment, its clinical facilities and its teaching force.]

2. A requirement for admission of at least a four-year-high-school education, and—on and after Jan. 1, 1914—in addition at least one year of college work, including at least eight semester hours each of physics, chemistry, biology and German or French.

3. These minimum requirements for admission to the study of medicine are set forth in the following statements relating (1) to the high school work and (2) to the work of the preliminary college year. The prescribed minimum of work in physics, chemistry, biology and German or French should be required by every medical school whether given in a preliminary year by the medical school itself or required in one or more years of collegiate work. The statements are as follows:

ADMISSION TO THE PRELIMINARY COLLEGE YEAR

(a) For admission to the preliminary college year, students must have completed a four-year course of at least fourteen units in a standard accredited high-school, or have its equivalent as demonstrated by an examination, and a transcript of the student's work should be secured directly from the principal of the high school by the college authorities and kept on file.

(b) The required and elective subjects for which credits for admission to the preliminary college year may be accepted are shown in the following schedule:

SCHEDULE OF SUBJECTS OFFERED IN ACADEMIC AND SECONDARY SCHOOLS, CREDITS IN WHICH ARE ACCEPTABLE FOR ENTRANCE TO THE PRELIMINARY COLLEGE YEAR LEADING TO THE MEDICAL COURSES

SUBJECTS	UNITS	REQUIRED	ELECTIVE
ENGLISH			
READING AND PRACTICE	2	2	...
Study and Practice	1	...	1
MATHEMATICS			
ALGEBRA TO QUADRATICS	1	1	..
Algebra (Quadratic Equations, Binomial Theorem and Progressions)	½	...	½
PLANE GEOMETRY	1	1	...
Solid Geometry	½	...	½
Trigometry	½	...	½
LATIN			
GRAMMAR AND COMPOSITION	1	*	1
CAESAR	1	*	1
Cicero	1	...	1
Virgil	1	...	1
Cornelius Nepos	1	...	1
Greek			
Grammar and Composition	1		1
Xenophon	1	...	1
Homer	1	...	1
GERMAN (OR FRENCH)			
ELEMENTARY	2	2*	...
Intermediate	1	...	1
Spanish			
Elementary	2	...	2
Scandinavian			
Elementary	2	...	2
HISTORY			
AMERICAN HISTORY AND CIVIL GOVERNMENT	1	1	...
Greek and Roman History	1	...	1
Medieval and Modern History	1	...	1
English History	1	...	1
Science †			
Botany and Zoology, each	1	...	1
or Biology	1	...	1
Chemistry	1	...	1
Physics	1	...	1
Physiography	½	...	½
Physiology	½	...	½
Agriculture	1	...	1
Drawing	1	...	1
Manual Training	1	...	1
Domestic Science	1	...	1
Music			
Appreciation or Harmony	1	...	1
Total	38½	7	31½

A *unit* is the credit value of at least 36 weeks' work of 4 or 5 recitation periods per week, each recitation period to be of not less than 40 minutes. In other words, a unit represents a year's study in any subject in a secondary school constituting approximately a quarter of a full year's work. A satisfactory year's work in any subject cannot be accomplished under ordinary circumstances in less than 120 sixty-minute hours, or their equivalent.

Required Branches: Of the 14 units of high-school work the subjects in capitals aggregating 7 units are required. Other work to the amount of at least 7 units may be made up from any of the other subjects of the above schedule.

* Two units of Greek or Latin may be substituted for the two required units of French or German.

† Credentials of each science course must include evidence of laboratory work.

WORK OF THE PRELIMINARY COLLEGE YEAR

(c) The preliminary college year shall extend through one college session of at least thirty-two weeks of actual instruction, including final examinations.

(d) In excellence of teaching and in content, the work of this preliminary college year shall be equal to the work done in the freshman year in standard colleges and universities.

(e) This preliminary college year shall include courses in physics, chemistry, biology and German or French, each course to embrace at least eight semester hours of didactic and laboratory work in each subject as shown in the following schedule, provided that a student may satisfy the requirement of physics in presenting one unit of high-school physics and completing a half year of college physics which continues and does not duplicate the work done in the high school:

SCHEDULE

Subject	Lectures or Recitations Per Week	Laboratory Periods * Per Week	Total Hours Per Semester	Total Semester Hours Per Year
Physics, 1...	2	2	4	8
Chemistry, 1.	2	2	4	8
Biology, 1...	2 or 3	2 or 1	4	8
German or French, 2..	4 or 3	.....	4 or 3	8 or 6
Total.....	10	6 or 5	16 or 15	32 or 30

* Each laboratory period must extend over at least two hours.

OR, EXPRESSED IN CLASS HOURS:

Subject	Total Hours Lectures, or Recitations	Total Hours Laboratory Work	Total Minimum Hours Didactic and Laboratory
Physics, 1...	64	128	192
Chemistry, 1.	64	128	192
Biology, 1...	64 or 96	128 or 64	192 or 160
German or French, 2.	128 or 96	... ...	128 or 96
Totals ..	320	384 or 320	704 or 640

(f) If a satisfactory "reading knowledge" of German or French is to be obtained in the one year of college work it is essential that an advanced course be offered and that the student have completed as a prerequisite in the high school two units of elementary work in German or French.

(g) By requiring two years of collegiate work for admission medical schools would have a greater latitude in the acceptance of high-school credentials. For example, the language requirement in the high school would not be so essential since the deficiency could easily be made up in the two years of collegiate work.

(h) It is understood, however, that a requirement of two or more years of collegiate work will not excuse the medical school from requiring the completion of a standard four-year high-school course as a prerequisite to that college work. In other words, "college work" will not be recognized as such by the Council unless the specified amount of high-school work has been required as a prerequisite

(i) It is also understood that a requirement of two or more years of collegiate work will not be considered acceptable unless courses in physics, chemistry, biology and German or French, the minimum amount of which is specified in the above table, are included.

(j) In medical colleges planning to give the work of the preliminary year, provision should be made for full-time expert teachers in the various subjects. Sufficient equipment should be provided to enable the students to do the work intelligently—in amount such as will compare favorably with the equipment for these courses in standard colleges and universities.

(k) The chief object of the work of the preliminary college year is to provide the student with a training that will enable him to enter more readily and intelligently on the study of the fundamental medical sciences in the medical school.

4. The college should require that students be in actual attendance in the college within the first week of each annual session and thereafter.

5. Actual attendance at classes should be insisted on except for good cause, such as for sickness, and under no circumstances should credit be given for any course where the attendance has been less than 80 per cent. of the full time.

6. (a) Full advanced standing may be granted to students only for work done in other acceptable colleges and in granting advanced standing there should be no discrimination against the college's full-course students. (b) Students from Class B medical schools should not be given advanced standing higher than *entrance* to the third year (junior) class and no credit should be given in any subject except on the recommendation of the head of the department teaching that subject. (c) Students from Class C colleges should not be given advanced standing higher than *entrance* to the second year (sophomore) class and then only after thorough examinations in all first year subjects have been passed. It is only in *exceptional cases* that such credit can be granted for work done in Class B and Class C colleges.

SUPERVISION, EQUIPMENT, TEACHERS

7. There should be careful and intelligent supervision of the entire school by a dean or other executive officer who holds, and has sufficient authority to carry out fair ideals of medical education as interpreted by modern knowledge.

8. There should be a good system of records showing conveniently and in detail the credentials, attendance, grades and accounts of the students by means of which an exact knowledge can be obtained regarding each student's work.

9. A fully graded course covering four years of at least 32 weeks each, exclusive of time required for matriculation and holidays, and at least 30 hours per week of actual work; this course should be clearly set forth in a carefully prepared and printed schedule of lectures and classes.

10. Two years of work consisting largely of laboratory work in thoroughly equipped laboratories in anatomy, histology, embryology, physiology, chemistry (inorganic, organic and physiologic), bacteriology, pathology, pharmacology, therapeutics and clinical diagnosis. Present day medical knowledge makes it quite essential that these subjects be in charge of full-time, thoroughly trained teachers.

11. Two years of clinical work largely in hospitals and dispensaries, with thorough courses in internal medicine (including physical diagnosis, pediatrics, nervous and mental diseases), surgery (including surgical anatomy and operative surgery on the cadaver), obstetrics, gynecology, laryngology, rhinology, ophthalmology, otology, dermatology, hygiene and medical jurisprudence.

12. As soon as conditions warrant, a fifth undergraduate year should be required which should be spent by the student as an intern in an approved hospital.

13. At least six expert, thoroughly trained professors in the laboratory branches, salaried so that they may devote their entire time to instruction and to that research without which they cannot well keep up with the rapid progress being made in their subjects. These professors should have a definite responsibility in the conduct of the college, and their first and chief interest should be in the training of the medical students. It is advised that four of these professors be placed in charge of the departments of (*a*) anatomy, (*b*) physiology, (*c*) pathology and bacteriology and (*d*) physiologic chemistry and pharmacology. The other two may be assigned one to the laboratory course in histology and embryology under the department of anatomy and the other to the department of pathology and bacteriology, possibly, to the course in laboratory clinical diagnosis. There should also be a sufficient number of assistants in each department to look after the less important details. For colleges having sixty students or less in each class, there should be at least one full-time salaried assistant for each of the four departments mentioned, and at least one additional assistant in each of these departments should be provided for each additional thirty students enrolled. This represents a low average of the full-time assistants already employed by the accepted medical colleges.

14. The faculty should be thoroughly organized and should be made up of graduates of institutions recognized as medical colleges and who have had a training in all departments of medicine. Non-medical men should be selected as teachers in medical schools only under exceptional circumstances and only because medical men of equal special capacity are not available. All faculty members should be appointed because of their ability as teachers and not because they happen to be on the attending staff of a hospital or for other like reasons.

CLINICAL FACILITIES

15. The college should own or entirely control a hospital in order that students may come into close and extended contact with patients under the supervision of the attending staff. This hospital should be in close proximity to the college and have a daily average (for senior classes of 100 students or less) of not less than 200 patients which can be utilized for clinical teaching, these patients to be of such character as to permit the student to see and study the common variety of surgical and medical cases as well as a fair number in each of the so-called specialties.

16. The college should also have ample hospital facilities for children's diseases, contagious diseases and nervous and mental diseases.

17. Facilities for at least six maternity cases for each senior student, who should have actual charge of these cases under the supervision of the attending physician. Careful records of each case should be handed in by the student.

18. Facilities for at least 30 autopsies during each college session which are attended and can be participated in by senior students (for senior classes of 100 students or less).

19. A dispensary, or out-patient department, under the control of the college, the attendance to be a daily average of 60 cases (for senior classes of 100 students or less), the patients to be carefully classified, good histories and records of the patients to be kept and the material to be well used. The attending staff should be made up of good teachers, should be well organized and be regular in attendance.

OTHER TEACHING FACILITIES

20. The college should have a working medical library to include the more modern text and reference books with the *Index Medicus* and 30 or more leading medical periodicals; the library room should be properly lighted and heated, and easily accessible to students during all or the greater part of the day; it should be equipped with suitable tables and chairs, and have a librarian in charge.

21. A working medical museum having its various anatomic, embryologic, pathologic and other specimens carefully prepared, labeled and indexed so that any specimen may be easily found and employed for teaching purposes. It is suggested that so far as possible with each pathologic specimen coming from post-mortems there also be kept the record of the post-mortem, the clinical history of the patient on whom the autopsy was held and microscopic slides showing the minute structures of the disease shown in the gross specimen.

22. There should be sufficient dissecting material to enable each student individually to dissect at least the lateral half of the human cadaver; to provide cross-sections and other demonstration material and to allow of a thorough course for each senior in operative surgery on the cadaver.

23. For modern experimental laboratory work in physiology, pharmacology and bacteriology as well as for a reasonable amount of medical research, a supply of animals—frogs, turtles, rabbits and guinea-pigs, if not also cats and dogs—is essential. Proper provision, also, is necessary for the housing and care of such animals. In any use made of animals great care should be used to prevent needless suffering and work by students should be carefully supervised.

24. A supply of such useful auxiliary apparatus as a stereopticon, a reflectoscope, carefully prepared charts, embryologic or other models, manikins, dummies for use in bandaging, a Roentgen-ray and other apparatus now so generally used in medical teaching.

25. The college should show evidences of thorough organization and of reasonably modern methods in all departments and evidences that the equipment and facilities are *being intelligently used* in the training of medical students.

26. A clear statement of the college's requirements for admission, tuition, time of attendance on the classes, sessions, courses offered and graduation should be clearly set forth, together with complete classified lists of its matriculants and latest graduating class in regular annual catalogues or announcements.

NOTE.—Correspondence from medical colleges regarding any of the above requirements is invited, and any further suggestions or information available will be gladly furnished.

Definitions of a Medical College * and a Medical School †

"An institution to be ranked as a medical college must have at least (6) professors giving their entire time to medical work, a graded course of four full years of college grade in medicine, and must require for admission not less than the usual four years of academic or high-school preparation, or its equivalent, in addition to the preacademic or grammar school studies."

By a medical school as differentiated from a medical college is meant a part of a university requiring for admission the equivalent of two years of collegiate work and offering instruction of not less than two years' duration, leading to the degree of Doctor of Medicine.

Grading of Medical Colleges

As in the previous classifications, all medical colleges were rated by the Council on Medical Education on a civil service basis on a scale of 1,000 points. The data relating to each college were grouped under ten general heads in such manner that the groups would have as nearly equal weight as possible, each group, allowing a possible 100 points (10 per cent.) out of a possible 1,000 points (100 per cent.). The ten heads under which the data were arranged are as follows:

1. Showing of graduates before state boards and other evidences of the training received.
2. Enforcement of a satisfactory preliminary educational requirement, granting of advanced standing and the character of records.
3. Character of curriculum, grading of course, length of session, time allowed for matriculation and supervision.
4. Medical school buildings; light, heat, ventilation, cleanliness.
5. Laboratory facilities and instruction.
6. Dispensary facilities and instruction.
7. Hospital facilities and instruction, maternity work, autopsies, specialties.
8. Faculty, number and qualifications of trained teachers, full-time instructors, and assistants, especially of the laboratory branches, organization, and extent of research work.
9. Extent to which the school is conducted for properly teaching the science of medicine rather than for the profit of the faculty directly or indirectly.
10. Possession and use made of libraries, museums, charts, stereopticons, etc.

Class A+ colleges are those which are acceptable; Class A those which need improvement in certain respects, but which are otherwise acceptable; Class B, those which, under their present organization, might be made acceptable by general improvements, and Class C, those which require a complete reorganization to make them acceptable.

CLASS A PLUS—ACCEPTABLE MEDICAL COLLEGES

1. *Giving an acceptable four-year course:*

CALIFORNIA

Leland Stanford Junior Univ., Dept. of Med....San Francisco
Univ. of California, Med. Dept.....San Francisco-Los Angeles

CONNECTICUT

Yale Medical School.....New Haven

ILLINOIS

Northwestern University Medical School.....Chicago
Rush Medical College (University of Chicago).....Chicago

INDIANA

Indiana University School of Med...Bloomington-Indianapolis

IOWA

State University of Iowa, College of Medicine.....Iowa City

LOUISIANA

Tulane University of Louisiana, Med. Dept.....New Orleans

MARYLAND

Johns Hopkins University Medical Department.....Baltimore

MASSACHUSETTS

Harvard Medical School .....Boston

MICHIGAN

University of Michigan, Dept. of Med. and Surg....Ann Arbor

MINNESOTA

University of Minnesota, Coll. of Med. and Surg...Minneapolis

MISSOURI

Washington University Medical School.....St. Louis

NEW YORK

Columbia University Coll. of Phys. and Surgs..New York City
Cornell University Medical College.....New York City
University and Bellevue Hospital Med. Coll....New York City
Syracuse University, College of Medicine.....Syracuse

OHIO

Ohio-Miami Med. Coll. of the Univ. of Cincinnati....Cincinnati
Western Reserve University Medical Department....Cleveland

PENNSYLVANIA

University of Pennsylvania, Dept. of Medicine...Philadelphia

TEXAS

University of Texas, Department of Medicine.....Galveston

VIRGINIA

University of Virginia, Department of Med....Charlottesville

2. *Giving a two-year course acceptably:*

MISSOURI

University of Missouri, School of Medicine.....Columbia

WISCONSIN

University of Wisconsin, College of Medicine.....Madison

Total 24.

CLASS A.—COLLEGES LACKING IN CERTAIN RESPECTS BUT OTHERWISE ACCEPTABLE

1. *Giving a complete four-year course:*

ALABAMA

University of Alabama, School of Medicine.....Mobile

COLORADO

University of Colorado, School of Medicine....Boulder-Denver

DISTRICT OF COLUMBIA

Georgetown University School of Medicine.....Washington
George Washington University, Dept. of Medicine..Washington
Howard University, School of Medicine.....Washington

GEORGIA

University of Georgia, College of Medicine[1].....Augusta

ILLINOIS

College of Physicians and Surgeons.....Chicago

IOWA

Drake University College of Medicine[2].....Des Moines
State University of Iowa, Homeopathic College....Iowa City

KANSAS

University of Kansas, School of Medicine...Lawrence-Rosedale

KENTUCKY

University of Louisville, Medical Department.....Louisville

MAINE

Medical School of Maine.....Brunswick-Portland

* This definition of a college is based on that given in the revised ordinances of the state of New York. It has been adopted also by the Carnegie Foundation for the Advancement of Teaching.

† Based on the definition of the term "school" adopted in 1909 by the Association of American Universities.

1. Rating changed to Class A, Feb. 24, 1913
2. Merged with the State University of Iowa College of Medicine in 1913.

MARYLAND
Baltimore Medical College[3] ..... Baltimore
College of Physicians and Surgeons ..... Baltimore
University of Maryland, School of Medicine ..... Baltimore

MASSACHUSETTS
Boston University School of Medicine ..... Boston
Tufts College Medical School ..... Boston

MICHIGAN
University of Michigan, Homeopathic College ..... Ann Arbor

MISSOURI
St. Louis University School of Medicine ..... St. Louis

NEBRASKA
University of Nebraska, College of Medicine ... Lincoln-Omaha

NEW HAMPSHIRE
Dartmouth Medical School ..... Hanover

NEW YORK
Albany Medical College ..... Albany
New York Homeo. Med. Coll. and Flower Hosp. .. New York City
University of Buffalo, Medical Department ..... Buffalo

OHIO
Starling-Ohio Medical College ..... Columbus

OREGON
University of Oregon, Medical Department ..... Portland

PENNSYLVANIA
Hahnemann Medical College and Hospital ..... Philadelphia
Jefferson Medical College ..... Philadelphia
Medico-Chirurgical College of Philadelphia ..... Philadelphia
Woman's Medical College of Pennsylvania ..... Philadelphia
University of Pittsburgh, School of Medicine ..... Pittsburgh

TENNESSEE
Meharry Medical College ..... Nashville
Vanderbilt University, Medical Department ..... Nashville

VERMONT
University of Vermont, College of Medicine ..... Burlington

VIRGINIA
Medical College of Virginia[4] ..... Richmond
University College of Medicine[4] ..... Richmond

2. *Giving a two-year course:*

MISSISSIPPI
University of Mississippi, Medical Department ..... Oxford

NORTH CAROLINA
University of North Carolina, School of Medicine .. Chapel Hill
Wake Forest College, School of Medicine ..... Wake Forest

NORTH DAKOTA
University of North Dakota, College of Medicine ... University

SOUTH DAKOTA
University of South Dakota, College of Medicine .... Vermilion

UTAH
University of Utah, School of Medicine ..... Salt Lake City

Total 42.

CLASS B.—COLLEGES NEEDING GENERAL IMPROVEMENTS TO BE MADE ACCEPTABLE

1. *Giving a complete four-year course:*

ALABAMA
Birmingham Medical College[5] ..... Birmingham

ARKANSAS
University of Arkansas, Medical Department ..... Little Rock

CALIFORNIA
College of Physicians and Surgeons ..... Los Angeles
Hahnemann Medical College of the Pacific ..... San Francisco
Oakland College of Medicine and Surgery ..... Oakland

GEORGIA
Atlanta College of Physicians and Surgeons[6] ..... Atlanta
Atlanta School of Medicine[6] ..... Atlanta

ILLINOIS
Bennett Medical College ..... Chicago
Chicago College of Medicine and Surgery ..... Chicago
Hahnemann Medical College and Hospital ..... Chicago

KANSAS
Kansas Medical College[7] ..... Topeka

MICHIGAN
Detroit College of Medicine ..... Detroit

MISSOURI
University Medical College[8] ..... Kansas City

NEBRASKA
John A. Creighton Medical College ..... Omaha

NEW YORK
Fordham University, School of Medicine ..... New York City
Long Island College Hospital ..... Brooklyn

OHIO
Eclectic Medical College ..... Cincinnati

OKLAHOMA
State Univ. of Okla., School of Med .... Norman-Oklahoma City

PENNSYLVANIA
Temple University, Department of Medicine ..... Philadelphia

SOUTH CAROLINA
Medical College of the State of South Carolina[9] .... Charleston

TENNESSEE
Memphis Hospital Medical College[10] ..... Memphis
University of Tennessee, Medical Department ..... Memphis

TEXAS
Baylor University College of Medicine ..... Dallas

2. *Giving a two-year course:*

WEST VIRGINIA
West Virginia University College of Medicine .... Morgantown

Total 24.

CLASS C.—COLLEGES REQUIRING A COMPLETE REORGANIZATION TO MAKE THEM ACCEPTABLE

CALIFORNIA
California Eclectic Medical College ..... Los Angeles
College of Physicians and Surgeons ..... San Francisco
College of Medical Evangelists ..... Loma Linda

GEORGIA
Georgia College of Eclectic Medicine and Surgery ..... Atlanta
Southern College of Medicine and Surgery ..... Atlanta

ILLINOIS
Chicago Hospital College of Medicine[11] ..... Chicago
Hering Medical College[12] ..... Chicago
Jenner Medical College[13] ..... Chicago

MARYLAND
Maryland Medical College[12] ..... Baltimore

MASSACHUSETTS
College of Physicians and Surgeons[14] ..... Boston

3. This college has merged with the University of Maryland School of Medicine.
4. These schools have been merged.
5. When the two classes now enrolled have been graduated this college will offer only a postgraduate medical course.
6. These colleges have been merged under the name of Atlanta Medical College.
7. This college has been merged with the University of Kansas School of Medicine.
8. College reported closed.
9. Rating raised to Class B, Feb. 24, 1913.
10. Has merged with the University of Tennessee Medical Department.
11. Reported not in good standing by the Illinois State Board of Health.
12. College reported closed.
13. Reported not fully recognized by twenty-nine different state licensing boards.
14. This college is reported as not recognized by the Massachusetts Medical Society.

MISSOURI

American Medical College.....St. Louis
Eclectic Medical University[12].....Kansas City
Ensworth Medical College[16].....St. Joseph
Kansas City Hahnemann Medical College.....Kansas City
St. Louis College of Physicians and Surgeons.....St. Louis

NEBRASKA

Cotner University Medical College.....Lincoln

NEW YORK

Eclectic Med. Coll. of the City of New York[17]...New York City
New York Med. Coll. and Hosp. for Women....New York City

NORTH CAROLINA

Leonard Medical School.....Raleigh, N. C.
North Carolina Medical College. .....Charlotte

OHIO

Cleveland-Pulte Medical College.....Cleveland
Toledo Medical College.....Toledo

OREGON

Willamette University Medical Department[18].....Salem

TENNESSEE

Lincoln Memorial University, Medical Department...Knoxville
University of West Tennessee, Medical Dept...Memphis, Tenn.

TEXAS

Fort Worth School of Medicine.....Fort Worth
Southern Methodist University Medical Department....Dallas

WISCONSIN

Milwaukee Medical College[19].....Milwaukee
Wisconsin College of Physicians and Surgeons[20].....Milwaukee

Note.—Official statements from the following state licensing boards indicate that as a rule the colleges rated in Class C are not recognized:

Alabama	Louisiana (Reg.)	Ohio
Arkansas (Reg.)	Maryland (Reg.)	Pennsylvania
Colorado	Michigan	Rhode Island
Connecticut (Reg.)	Minnesota	Texas
Delaware	New Hampshire	Vermont
Indiana	New Jersey	Virginia
Iowa	New Mexico	West Virginia
Kentucky	North Dakota	Wisconsin

Colleges and States Having Higher Entrance Requirements

The thirty-two medical schools which are now requiring as a minimum for entrance two or more years of work in a college of liberal arts in addition to a four-year high-school education are as follows:

College	Began
Johns Hopkins University, Medical Department	1893
Harvard Medical School	1900
Western Reserve University School of Medicine	1901
University of Chicago, Rush Medical College	1904
University of California, Medical Department	1905
University of Minnesota Medical School	1907
University of North Dakota, College of Medicine	1907
University of Wisconsin, College of Medicine	1907
Cornell University Medical College	1908
Wake Forest College, School of Medicine	1908
Leland Stanford Junior University, Department of Medicine	1909
Yale Medical School	1909
University of Kansas, School of Medicine	1909
University of Michigan, College of Medicine	1909
University of Nebraska, College of Medicine	1909
University of South Dakota, College of Medicine	1909
University of Colorado, School of Medicine	1910
Indiana University School of Medicine	1910
State University of Iowa, College of Medicine	1910
State University of Iowa, College of Homeopathic Medicine	1910
Drake University, College of Medicine	1910
University of Missouri, Department of Medicine	1910
Dartmouth Medical School	1910
Columbia University College of Physicians and Surgeons	1910
Syracuse University College of Medicine	1910
University of Pennsylvania, Medical Department	1910
University of Utah, Medical Department	1910
Northwestern University Medical School	1911
Georgetown University School of Medicine	1912
Washington University Medical School	1912
Ohio-Miami Medical College, Univ. of Cincinnati	1913
University of Pittsburgh, School of Medicine	1913

15. Reported not in good standing by the Missouri State Board of Health.

16. This college will close when the senior class now enrolled has been graduated.

17. Not included among fully registered colleges in the list issued by the New York Education Department, October, 1912. Reported suspended same year.

18. Merged with the University of Oregon Medical Department at Portland.

19. This college was closed in December, 1912, and its property leased to Marquette University.

20. In December, 1912, the property of this school was transferred to Marquette University, which is developing a new school of medicine.

The following seven medical schools have announced the adoption of the two-year collegiate requirement to take effect in the year given:

University of Georgia, College of Medicine	1914
University of Illinois, College of Medicine	1914
University of Louisville Medical Department	1914
Fordham University School of Medicine	1914
University of Alabama, School of Medicine	1915
College of Medical Evangelists, Loma Linda, Cal.	1915
Marquette University, School of Medicine	1915

The twenty-one following colleges require, in addition to a four-year high-school course, one year of college work in physics, chemistry, biology and a modern language, the requirement beginning in the year given:

College	In Force
Howard University, School of Medicine	1910
Tulane University, School of Medicine	1910
St. Louis University, School of Medicine	1910
University of North Carolina, School of Medicine	1910
University of Oregon, Medical Department	1910
University of Texas, Medical Department	1910
University of Virginia, Department of Medicine	1910
West Virginia University, School of Medicine	1911
Medical School of Maine	1912
University of Michigan, Homeopathic College	1912
University and Bellevue Hospital Medical College	1912
Leonard Medical School	1912
University of Vermont, College of Medicine	1912
University of Illinois, College of Medicine	1913
Cleveland-Pulte Medical College	1913
Hahnemann Medical College, Philadelphia	1913
Jefferson Medical College	1913
Medico-Chirurgical College of Philadelphia	1913
Temple University, Department of Medicine	1913
Woman's Medical College of Pennsylvania	1913
Baylor University, College of Medicine	1913

The twenty-one following medical colleges have intimated that, beginning in 1914, they will require for admission, in addition to a standard four-year high-school education, the premedical college year devoted to courses in physics, chemistry, biology and a modern language:

College	In Force
College of Physicians and Surgeons, Los Angeles	1914
Oakland College of Medicine and Surgery	1914
George Washington University, Medical Department	1914
Bennett Medical College	1914
College of Physicians and Surgeons, Baltimore	1914
University of Maryland, School of Medicine	1914
Boston University, School of Medicine	1914
Tufts College Medical School	1914
Detroit College of Medicine	1914
University of Mississippi, Medical Department	1914
John A. Creighton Medical College	1914
Albany Medical College	1914
Long Island College Hospital	1914
University of Buffalo, Medical Department	1914
Starling-Ohio Medical College	1914
State University of Oklahoma, School of Medicine	1914
Vanderbilt University Medical Department	1914
University of Tennessee, Department of Medicine	1914
Fort Worth School of Medicine	1914
Southern Methodist University, Medical Department	1914
Medical College of Virginia	1914

After Jan. 1, 1914, therefore, there will be seventy-one medical colleges which will have put into effect entrance requirements of at least one year of college work including courses in physics, chemistry, biology and a modern language.

Higher Preliminary Requirements by State Boards

There are now thirteen state medical licensing boards which have adopted preliminary requirements in advance of a four-year high-school education. These are as follows:

State Examining Board of	No. of Years Required.	Affects Students Matriculating.	Affects all Applicants
North Dakota	2	1907-08	1911
Iowa	2	1907-08	1911
Minnesota	2	1908-09	1912
Colorado	2	1910-11	1914
Connecticut	1	1910-11	1914
Kansas	1	1910-11	1914
Indiana	2	1910-11	1914
Utah	1	1910-11	1914
South Dakota	2	1911-12	1915
Vermont	1	1912-13	1916
Pennsylvania	1	1913-14	1917
Kentucky	2	1914-15	1918
California	1	1914-15	1918

The Association of American Medical Colleges

The requirements for admission to and graduation from colleges holding membership in this association are as follows:

SECTION 1.—Every college holding membership in this Association shall, on and after Jan. 1, 1912, require for matriculation a completed or unconditioned medical student's certificate, to be granted by a state medical examining and licensing board, or a board empowered by statute to grant such certificates, or a certificate of entrance to the academic department of any state university, or a certificate of entrance to an accredited university or college, providing that said certificate is granted on no less than the following requirements:

(*a*) A bachelor's degree from an accredited college or university.

(*b*) A diploma and transcript of record from a fully accredited high school, normal school or academy requiring for admission evidence of the completion of a standard course in primary and intermediate grades, and for graduation, the completion of a standard four-year high-school course, embracing two years (2 units) of mathematics, two years (2 units) of English, two years (2 units) of one foreign language, one year (1 unit) of American history and civics, and seven years (7 units) of further credit in language, literature, history or science, making the total of units at least fourteen; and in addition, one year each of physics, chemistry and biology of college grade of each not less than six semester hours.

(*c*) An examination in the following branches totalling 14 units:

(A) Required, 7 units.

	Units.
Mathematics (minimum 2 years, maximum 3 years), algebra and plane geometry	2
English (minimum 2 years, maximum 4 years)	2
One foreign language (minimum 2 years, maximum 4 years)	2
History (U. S.) and civics	1
Total number of required units	7

(B) Elective, 7 units.
To be selected from the following:

	Units.
English language and literature (in addition to the required work)	1 to 2
Foreign languages, additional, Latin, German, Italian, French, Spanish or Greek (not less than 1 year in any one)	1 to 4
Advanced mathematics, advanced algebra, solid geometry and trigonometry (½ year each)	1
Natural science, chemistry 1 year, physics 1 year, and biology, botany, physiology and zoology (½ to 1 year each)	½ to 2
Earth science, physical geography, geology and agriculture (½ year to 1 year each)	½ to
Astronomy (½ year)	½
Drawing (½ to 1 year)	½ to 1
History, ancient, medieval and modern, and English (1 year each)	1 to 3
Economics (½ year)	½
Manual training (1 year)	1
Book-keeping (½ to 1 year)	½ to 1

And in addition one year each of physics, chemistry and biology of college grade, of each not less than 8 semester hours.

One unit in any subject is the equivalent of work in that subject for four or five periods per week for a year of at least thirty-six weeks, periods to be not less than forty-five minutes in length. One unit is equivalent to 2 semester credits or 2 points.

THE PRELIMINARY COLLEGE YEAR

At a joint meeting of the committees representing the Association of American Medical Colleges and the Council on Medical Education of the American Medical Association held March 22, 1913, and with the advice of Dr. Kendric C. Babcock, Specialist in Higher Education of the United States Bureau of Education, the following requirements were adopted for the preliminary college year:

(*a*) The preliminary college year shall extend through one college session of at least thirty-two weeks of actual instruction, including final examinations.

(*b*) In excellence of teaching and in content, the work of this preliminary college year shall be equal to the work done in the freshman year in standard colleges and universities.

(*c*) This preliminary college year shall include courses in physics, chemistry, biology and German or French, each course to embrace at least eight semester hours of didactic and laboratory work in each subject as shown in the following schedule, provided that a student may satisfy the requirement of physics in presenting one unit of high-school physics and completing a half year of college physics which continues and does not duplicate the work done in the high school:

SCHEDULE

Subject	Lectures or Recitations Per Week	Laboratory Periods * Per Week	Total Hours Per Semester	Total Semester Hours Per Year
Physics, 1	2	2	4	8
Chemistry, 1	2	2	4	8
Biology, 1	2 or 3	2 or 1	4	8
German or French, 2	4 or 3	.....	4 or 3	8 or 6
Total	10	6 or 5	16 or 15	32 or 30

* Each laboratory period must extend over at least two hours.

OR, EXPRESSED IN CLASS HOURS:

Subject	Total Hours Lectures, or Recitations	Total Hours Laboratory Work	Total Minimum Hours Didactic and Laboratory
Physics, 1	64	128	192
Chemistry, 1	64	128	192
Biology, 1	64 or 96	128 or 64	192 or 160
German or French, 2	128 or 96	.....	128 or 96
Totals	320	384 or 320	704 or 640

(*d*) In medical colleges planning to give the work of the preliminary year, provision should be made for full-time expert teachers in the various subjects. Sufficient equipment should be provided to enable the students to do the work intelligently—in amount such as will compare favorably with the equipment for these courses in standard colleges and universities.

(*e*) It should be remembered that the chief object of the work of the preliminary college year is to provide the student with a training that will enable him to enter more readily and intelligently on the study of the fundamental medical sciences in the medical school.

SEC. 2.—This examination must be conducted by or under the authority of the board of medical examiners of the state in which the college is located, or by a duly authorized examiner of the college entrance examination board, or the authorized examiner of an accredited university, state or otherwise, or by an examiner whose certificates are accepted by accredited colleges or universities, or by a method approved by the judicial council of this association.

SEC. 3.—The term "accredited" as applied to high schools, academies, colleges and universities means institutions of that type that have been investigated and are accredited by the state university of their respective states, by the North Central Association of Colleges and Secondary Schools, the Association of Colleges and Preparatory Schools of the Southern States, the Association of Colleges and Preparatory Schools of the Middle States and Maryland, the New England College Entrance Certificate Board, the Association of American Universities and the Association of State Universities, provided that such accrediting is based on Article III, Section 1, of this constitution.

SEC. 4.—Colleges in membership in this Association may honor the official credentials presented by students from other colleges having the standard requirements maintained by members of this Association, excepting for the fourth year of the course, but no member of this Association shall admit a student to advanced standing without receiving from the dean, secretary or registrar of such college a direct written communication certifying to the applicant's standing. Credit for time or scholarship cannot be given beyond that of the college issuing the credentials, except by mutual agreement between the colleges.

SEC. 5.—Candidates for the degree of Doctor of Medicine shall have attended four courses of study in four calendar years, each annual course to have been of not less than thirty-two teaching weeks' duration, and at least ten months shall intervene between the beginning of any course and the beginning of the preceding course.

SEC. 6.—No time credit shall be given to holders of a Bachelor's degree, but subject credit may be given on satisfactory examination. Four years of residence in a medical college shall be required of all candidates for the degree of Doctor of Medicine.

SEC. 7.—A college which gives less than a four years' course of study, but does not graduate students, and is possessed of other required qualifications, may be admitted to membership.

SEC. 8.—Each student shall be obliged to attend not less than 80 per cent. of the exercises in every annual course of study for which he seeks credit. No student shall be given credit on examination unless he attains a grade of at least 70 per cent. or its equivalent in any other marking system. And no student shall be graduated unless he shall have attained a passing grade in each and all subjects of the required curriculum.

CURRICULUM

SECTION 1.—The entire course of four years shall consist of at least 4,000 hours for each student, and shall be grouped in divisions and subdivided into subjects; each division and subject to be allotted the number of hours as shown in the following schedule:

DIVISION 1.—ANATOMY, 720 Hours (18 per Cent.)

	Hours.	Lect. Rec. Dem.	Lab. Wk
(a) Gross anatomy (including applied anatomy)	510	120	390
(b) Histologic and microscopic anatomy	135	30	105
(c) Embryology	75	30	45

DIVISION 2.—PHYSIOLOGY AND CHEMISTRY, 600 Hours (15 Per Cent.)

	Hours.	Lect. Rec. Dem.	Lab. Wk.
(a) Inorganic chemistry	180	60	120
(b) Organic chemistry	75	30	45
(c) Physiologic chemistry	104	30	75
(d) Physiology	240	140	100

DIVISION 3.—PATHOLOGY, BACTERIOLOGY AND HYGIENE, 450 Hours (11.25 Per Cent.)

	Hours.	Lect. Rec. Dem.	Lab. Wk.
(a) Bacteriology	135	30	105
(b) Hygiene and general dietetics	45	45	...
(c) Pathology	270	60	210

DIVISION 4.—PHARMACOLOGY, MATERIA MEDICA AND THERAPEUTICS, 240 Hours (6 Per Cent.)

	Hours.	Lect. Rec. Dem.	Lab. Wk.
(a) Pharmacology	105	40	65
(b) Materia medica and pharmacology	80	...	...
(c) Therapeutics	55	...	...

DIVISION 5.—MEDICINE AND MEDICAL SPECIALTIES, 970 Hours (24.25 Per Cent.)

	Hours.	Lect. Rec. Dem.	Lab. Wk.
(a) General medicine (including clinical microscopy)	640	...	...
(b) Pediatrics	150	...	...
(c) Nervous and mental diseases	105	...	...
(d) Jurisprudence, ethics and economics	30	...	...
(e) Dermatology and syphilis	45	...	...

DIVISION 6.—SURGERY AND SURGICAL SPECIALTIES, 720 Hours (18 Per Cent.)

	Hours.	Lect. Rec. Dem.	Lab. Wk.
(a) General surgery	510	...	...
(b) Orthopedic surgery	45	...	...
(c) Genito-urinary diseases	45	...	...
(d) Eye	60	...	...
(e) Ear, nose and throat	60	...	...

DIVISION 7.—OBSTETRICS AND GYNECOLOGY, 300 Hours (7.5 Per Cent.)

	Hours.	Lect. Rec. Dem.	Lab. Wk.
(a) Obstetrics	195	...	...
(b) Gynecology (including some abdominal surgery)	105	...	...

Colleges may reduce the number of hours in any subject not more than 20 per cent. provided that the total number of hours in a division is not reduced. Where the teaching conditions in a college are best subserved, the subject may be, for teaching purposes, transferred from one division to another. When didactic and laboratory hours are specified in any subject, laboratory hours may be substituted for didactic hours.

SEC. 2.—Each medical college in membership in the Association shall print in every annual catalogue or announcement a table of the total number of hours work given in said college, arranged both by subjects and years.

SEC. 3.—Each college in membership in this Association shall print annually a list of its students by classes.

MEMBERS OF ASSOCIATION

University of Alabama, School of Medicine.
Leland Stanford Junior University, Department of Medicine.
University of California, Medical Department.
University of Southern California, Medical Department.
University of Colorado, School of Medicine.
Yale Medical School.
Georgetown University, School of Medicine.
George Washington University, Department of Medicine.
Howard University, Medical Department.
University of Georgia, College of Medicine.
Northwestern University, Medical School.
Rush Medical College.
University of Illinois, College of Medicine.
Indiana University, School of Medicine.
State University of Iowa, College of Medicine.
University of Kansas, School of Medicine.
University of Louisville, Medical Department.
Tulane University, School of Medicine.
College of Physicians and Surgeons, Baltimore.
Johns Hopkins University, Medical Department.
University of Maryland, School of Medicine.
Medical School of Harvard University.
Tufts College Medical School.
Detroit College of Medicine.
University of Michigan, Department of Medicine and Surgery.
University of Minnesota, Medical School.
University of Mississippi, Medical Department.
St. Louis University, School of Medicine.
University of Missouri, School of Medicine.
Washington University, Medical School.
John A. Creighton Medical College, Medical Department.
University of Nebraska, College of Medicine.
College of Physicians and Surgeons, Columbia University.
Cornell University Medical College.
Syracuse University, College of Medicine.
University and Bellevue Hospital Medical College.
University of Buffalo, Medical Department.
University of North Carolina, Department of Medicine.
Wake Forest College, School of Medicine.
University of North Dakota, College of Medicine.
Ohio-Miami Medical College of the University of Cincinnati.
Starling-Ohio Medical College.
Western Reserve University, School of Medicine.
State University of Oklahoma, School of Medicine.
Hahnemann Medical College and Hospital, Philadelphia.
University of Pennsylvania, Medical Department.
University of the Philippines, College of Medicine and Surgery.
University of Pittsburgh, School of Medicine.
Meharry Medical College.
Vanderbilt University, Medical Department.
University of Texas, Medical Department.
University of Utah, Department of Medicine.
University of Vermont, College of Medicine.
Medical College of Virginia.
University of Wisconsin, College of Medicine.

The secretary-treasurer of the Association is Dr. Fred C. Zapffe, 3431 Lexington Street, Chicago.

STATE BOARD NOTES

New Medical Practice Acts.—New medical practice acts have been recently secured for Alaska, Arizona, California, Georgia, Michigan and Pennsylvania. The new practice act of California provides for a year of collegiate work as the minimum standard of preliminary education for all applicants in 1918 and thereafter. The new law of Georgia does away with three separate sectarian boards, replacing them with a single board having on it representatives of all the "schools" of medicine. The new practice act of Pennsylvania requires a year of college work in physics, chemistry and biology in addition to a four-year high-school education, and also requires that before he is eligible to take the license examination the graduate must have served an internship in an approved hospital.

Class C Colleges not Recognized.—At a recent meeting, the New Mexico State Board of Medical Examiners adopted a resolution that hereafter colleges rated in Class C by the Council on Medical Education will not be considered in good standing with that board. This makes twenty-five state boards which have adopted such measures.

New Federation of State Medical Boards.—The organization of a new Federation of State Medical Boards was completed last February and it has a great opportunity for good. A uniformly high but fair standard upheld in all states will make it easier to establish reciprocity between all states. But standards at present are far from uniform and in some states adequate barriers to protect the public against incompetent doctors, quacks and impostors do not exist. To bring about better safeguards against these evils is a very important work. The remarkable improvements made in recent years among medical colleges reveals in stronger contrast the great need of improvements in medical licensure. In no state are the requirements for the license as strict as in the majority of European countries. In no state is the license examination so severe as that of Germany, or that given by the Conjoint Board of England. And no organization is better situated to bring about improvements in medical licensure in this country than is the new Federation of State Medical Boards.

State University Medical Schools

Twenty-seven states now have medical schools as integral parts of the state universities or—in one instance—under state control as separate institutions. These states and other interesting data regarding the medical schools are as follows:

STATE UNIVERSITY MEDICAL SCHOOLS

Medical School of State University of	Only School in State	Length of Med. Course in Years.	Years of College Work for Admission.	Medical School of State University of	Only School in State.	Length of Med. Course in Years.	Years of College Work for Admission.
Alabama	1915	4	..[2]	North Carolina	.....	2	1
Arkansas	Yes	4	.....	North Dakota	Yes	2	2[3]
California	.....	4	2	Oklahoma	Yes	4	.....
Colorado	Yes	4	2[3]	Oregon	Yes	4	1
Georgia	.....	4	..[1]	South Carolina	Yes	4	.....
Illinois	.....	4	..[1]	South Dakota	Yes	2	2[3]
Indiana	Yes	4	2[3]	Tennessee	.....	4	.....
Iowa*	Yes	4	2[3]	Texas	.....	4	1
Kansas	Yes	4	2	Utah	Yes	2	2
Michigan*	.....	4	2	Vermont	Yes	4	1
Minnesota	Yes	5	2[3]	Virginia	.....	4	1
Mississippi	Yes	2	.....	West Virginia	Yes	2	1
Missouri	.....	2	.....	Wisconsin	.....	2	2
Nebraska	.....	4	2				

* Have Homeopathic Departments.
1. To require 2 years in 1914.
2. To require 2 years in 1915.
3. Similar requirement by Licensing Board.

In fifteen states no other medical schools exist, medical education in the state being entirely in charge of the state university. This will be true in Alabama also in 1915, when an independent medical school now existing will give only post-graduate instruction.

TABLE 1.—STATISTICS OF MEDICAL COLLEGES IN THE UNITED STATES AND CANADA

Marginal Number.	NAME AND LOCATION OF COLLEGE.	Population of city where college is located. (Census of 1910.)	Classification by Council on Medical Education.	No. of students registered 1912-13. Men.	No. of students registered 1912-13. Women.	Graduates 1913. Men.	Graduates 1913. Women.	Grads. with A.B., B.S., or Ph.B.	No. of teachers.	Weeks in college year.	Total Fees (Dollars.) 1st year.	Total Fees (Dollars.) 2nd year.	Total Fees (Dollars.) 3rd year.	Total Fees (Dollars.) 4th year.	Executive Officer	Session of 1913-14. Begins 1913.	Session of 1913-14. Ends 1914.	Marginal Number.
	ALABAMA			**217**	...	**49**	...	**6**										
1	Birmingham Medical College, Birmingham	132,685	B	102	...	28	...	3	33	31	...	...	105	130	E. P. Hogan, M.D., Secretary	Oct. 1	May 21	1
2	University of Alabama, School of Medicine, Mobile	51,521	A	115	...	21	...	3	57	33	150	145	145	145	Eugene D. Bondurant, M.D., Dean	Sept. 22	May 28	2
	ARKANSAS			**109**	**1**	**32**	...	**2**										
3	University of Arkansas, Medical Department, Little Rock	45,941	B	109	1	32	...	2	51	32	125	125	125	150	Morgan Smith, M.D., Dean	Sept. 15	May 14	3
	CALIFORNIA			**389**	**52**	**88**	**4**	**16**										
4	College of Physicians and Surgeons, San Francisco	416,912	C	17	2	3	...	...	39	36	165	160	160	185	Ethan H. Smith, M.D., Dean	Sept. 2	June 4	4
5	Hahnemann Medical College of the Pacific, San Francisco.—H	416,912	B	34	4	15	1	...	35	30	155	100	100	100	James W. Ward, M.D., Dean	Aug. 12	April 1	5
6	Leland Stanford Junior Univ., Dept. of Med., San Francisco	416,912	A+	49	4	7	...	7	79	34	160	160	150	150	R. L. Wilbur, M.D., Dean	Sept. 3	May 14	6
7	University of California, Medical Department, San Francisco	416,912	A+	85	19	7	1	7	56	35	165	175	160	160	Herbert C. Moffitt, M.D., Dean	Aug. 18	May 15	7
8	California Eclectic Medical College, Los Angeles.—E	319-198	C	20	...	4	...	...	30	32	145	110	100	125	J. A. Munk, M.D., Dean	Sept. 15	May 21	8
9	College of Physicians and Surgeons, Los Angeles	319,198	B	116	9	24	2	2	59	36	160	157	155	182	Charles W. Bryson, M.D., Dean	Sept. 10	June 11	9
10	University of California, Los Angeles Department	319,198	A+	7	...	4	...	...	61	35	...	...	160	160	W. Jarvis Barlow, M.D., Dean	Aug. 22	May 15	10
11	Oakland College of Medicine and Surgery, Oakland	150,174	B	13	...	4	...	...	34	35	210	200	175	175	Edward N. Ewer, M.D., Dean	Aug. 18	June 1	11
12	College of Medical Evangelists, Loma Linda	110	C	48	14	...	...	...	11	36	116	111	111	121	George K. Abbott, M.D., Dean	Sept. 18	June 17	12
	COLORADO			**84**	**6**	**46**	**4**	**12**										
13	University of Colorado, School of Medicine, Boulder-Denver	213,381	A	84	6	46	4	12	70	36	75	75	75	75	William P. Harlow, M.D., Dean	Sept. 8	June 3	13
	CONNECTICUT			**42**	...	**9**	...	**6**										
14	Yale Medical School, New Haven	133,605	A+	42	...	9	...	6	59	35	223	155	153	163	George Blumer, M.D., Dean	Sept. 25	June 17	14
	DISTRICT OF COLUMBIA			**348**	**3**	**59**	**2**	**6**										
15	George Washington University, Dept. of Medicine, Washington	331,069	A	102	1	10	1	2	72	34	158	159	150	150	W. C. Borden, M.D., Dean	Sept. 24	June 10	15
16	Georgetown University, School of Medicine, Washington	331,069	A	126	...	29	...	3	54	34	165	150	150	150	George M. Kober, M.D., Dean	Sept. 27	June 13	16
17	Howard University, School of Medicine, Washington	331,069	A	120	2	20	1	1	41	32	107	102	102	109	Edward A. Balloch, M.D., Dean	Oct. 1	June 3	17
	GEORGIA			**755**	**8**	**204**	**1**	**7**										
18	Atlanta Medical College	154,839	....	....	...	...	...	...	104	32	150	150	150	150	W. S. Elkin, M.D., Dean	Sept. 29	June 1	18
19	Atlanta College of Physicians and Surgeons (a)	154,839	B	338	...	86	...	4	...	...	...	...	...	...	.....	.....	.....	19
20	Atlanta School of Medicine (a)	154,839	B	222	...	35	...	2	...	...	...	...	...	...	.....	.....	.....	20
21	Georgia College of Eclectic Medicine and Surgery, Atlanta.—E	154,839	C	68	2	42	...	...	21	27	80	80	80	105	Elzie B. Thomas, M.D., Dean	Sept. 19	April 18	21
22	Southern College of Medicine and Surgery, Atlanta (b)	154,839	C	47	6	14	1	...	22	27	70	70	70	90	W. B. Lingo, M.D., Dean	Sept. 20	April 20	22
23	University of Georgia, College of Medicine, Augusta	41,040	A	80	...	27	...	1	51	33	140	135	125	150	William H. Doughty, Jr., Dean	Sept. 17	May 27	23
	ILLINOIS			**2356**	**140**	**552**	**43**	**139**										
24	Bennett Medical College, Chicago	2,185,283	B	382	13	61	5	11	86	35	150	150	125	175	Maximilian Herzog, M.D., Dean	Oct. 1	June 20	24
25	Chicago College of Medicine and Surgery, Chicago	2,185,283	B	609	33	175	13	17	138	31	100	100	100	100	Henry S. Tucker, M.D., Dean	Sept. 20	May 25	25
26	Hahnemann Medical College and Hospital, Chicago.—H	2,185,283	B	66	10	27	4	...	70	32	130	125	155	170	W. Henry Wilson, M.D., Dean	Sept. 29	May 28	26
27	Hering Medical College.—H (b)	2,185,283	C	32	7	13	2	1	...	...	...	...	...	...	.....	.....	.....	27
28	Jenner Medical College, Chicago (c)	2,185,283	C	177	14	9	2	...	49	38	140	140	120	125	John D. MacKellar, M.D., Secretary	Sept. 2	June 13	28
29	Northwestern University Medical School, Chicago	2,185,283	A+	196	...	55	1	11	138	33	200	200	191	185	Arthur R. Edwards, M.D., Dean	Sept. 30	June 6	29
30	Rush Medical College (University of Chicago)	2,185,283	A+	391	31	90	5	81	154	34	185	180	180	180	John M. Dodson, M.D., Dean	Oct. 1	June 10	30
31	University of Illinois, College of Medicine, Chicago	2,185,283	A	503	32	122	11	18	133	33	155	155	155	155	William E. Quine, M.D., Dean	Oct. 1	June 9	31
	INDIANA			**139**	**7**	**46**	**1**	**16**										
32	Indiana University, School of Medicine, Indianapolis	233,650	A+	139	7	46	1	16	123	36	100	100	130	130	Charles P. Emerson, M.D., Dean	Sept. 25	June 24	32
	IOWA			**148**	**8**	**41**	**5**	**5**										
33	Drake University, College of Medicine, Des Moines (d)	86,368	A	40	5	20	4	2	...	...	...	...	...	...	.....	.....	.....	33
34	State University of Iowa, College of Medicine, Iowa City	10.091	A+	96	2	15	1	3	41	36	50	50	50	50	J. R. Guthrie, M.D., Dean, Dubuque	Sept. 22	June 17	34
35	State Univ. of Iowa, Coll. of Homeopathic Medicine, Iowa City.—H	10.091	....	12	1	6	...	...	40	36	50	50	50	60	George Royal, M.D., Dean	Sept. 22	June 17	35
	KANSAS			**94**	**5**	**28**	**1**	**6**										
36	Kansas Medical College, Topeka (e)	43,684	B	32	1	21	1	2	...	...	...	...	...	...	.....	.....	.....	36
37	University of Kansas, School of Medicine, Kansas City	82,321	A	62	4	7	...	4	58	35	45	45	100	110	M. T. Sudler, M.D., Asso. Dean	Sept. 17	June 10	37
	KENTUCKY			**255**	...	**77**	...	...										
38	University of Louisville, Medical Department, Louisville	223,928	A	255	...	77	...	...	73	32	150	150	150	160	W. Edward Grant, M.D., Dean	Oct. 1	May 29	38
	LOUISIANA			**296**	...	**79**	...	**23**										
39	Tulane University School of Medicine, New Orleans	339,075	A+	296	...	79	...	23	117	32	180	180	180	210	Isadore Dyer, M.D., Dean	Sept. 29	June 3	39
	MAINE			**75**	...	**13**	...	**4**										
40	Medical School of Maine, Portland	58,571	A	75	...	13	...	4	63	33	120	110	110	110	Addison S. Thayer, M.D., Dean	Oct. 16	June 24	40

H., Homeopathic; E., Eclectic.

	MARYLAND			**1133**	**38**	**240**	**6**	**80**											
41	Baltimore Medical College, Baltimore (f)	558,485	A	176	...	29	...	...	...	...	...	...	...	...	...				41
42	College of Physicians and Surgeons, Baltimore	558,485	A	234	...	60	...	1	69	32	165	165	165	195	William F. Lockwood, M.D., Dean	Oct. 1	June 1		42
43	Johns Hopkins University, Medical Department, Baltimore	558,485	A+	317	34	71	5	76	118	33	200	200	200	200	J. Whitridge Williams, M.D., Dean	Oct. 1	June 10		43
44	Maryland Medical College, Baltimore (g)	558,485	C	113	4	31	1	...	...	...	...	...	...	...	...	...	...		44
45	University of Maryland, School of Medicine, Baltimore	558,485	A	293	...	49	...	3	135	32	170	170	170	200	R. Dorsey Coale, M.D., Dean	Oct. 1	June 1		45
	MASSACHUSETTS			**730**	**50**	**166**	**9**	**60**											
46	Boston University, School of Medicine.—H	670,585	A	80	18	9	2	3	70	32	130	125	125	155	John P. Sutherland, M.D., Dean	Oct. 2	June 3		46
47	College of Physicians and Surgeons, Boston (h)	670,585	C	80	...	19	...	...	26	...	80	100	100	130	T. D. Crothers, M.D., Dean	.....	.....		47
48	Harvard Medical School, Boston	670,585	A+	285	...	60	...	56	194	35	237	208	200	200	Edward H. Bradford, M.D., Dean	Sept. 22	June 18		48
49	Tufts College Medical School, Boston	670,585	A	285	32	78	7	1	111	33	155	155	155	155	Frederic M. Briggs, M.D., Secretary	Sept. 24	June 1		49
	MICHIGAN			**461**	**20**	**80**	**3**	**32**											
50	Detroit College of Medicine, Detroit	465,766	B	197	...	27	...	2	125	35	115	120	100	130	Frank B. Walker, M.D., Secretary	Sept. 24	June 4		50
51	University of Michigan, Dept. of Med. and Surg., Ann Arbor	14,817	A+	206	15	41	1	28	78	35	108	87	102	62	Victor C. Vaughan, M.D., Dean	Sept. 24	June 4		50
52	University of Michigan, Homeopathic College, Ann Arbor.—H	14,817	A	58	5	12	2	2	21	35	108	87	102	62	W. B. Hinsdale, M.D., Dean	Sept. 30	June 25		52
	MINNESOTA			**166**	**10**	**41**	**4**	**35**											
53	University of Minnesota, Medical School, Minneapolis	301,408	A+	166	10	41	4	35	86	35	150	150	150	150	E. P. Lyon, M.D., Dean	Sept. 17	June 11		53
	MISSISSIPPI			**33**	...	...	...	...											
54	University of Mississippi, Medical Department, Oxford	2,014	A	33	...	...	...	...	13	34	107	100	...	...	W. S. Leathers, M.D., Dean	Sept. 18	June 2		54
	MISSOURI			**764**	**26**	**220**	**6**	**7**											
55	University of Missouri, School of Medicine, Columbia	9,662	A+	44	1	...	...	...	15	34	60	60	...	...	Address correspondence to The Dean	Sept. 18	June 4		55
56	Kansas City Hahnemann Medical College, Kansas City.—H	248,381	C	58	...	49	...	1	...	...	...	...	...	...	M. T. Runnels, M.D., Dean	Sept. 8	May 21		56
57	University Medical College, Kansas City (i)	248,381	B	58	...	49	...	1	...	...	...	...	...	...	.....	.....	.....		57
58	Eclectic Medical University, Kansas City (j)	248,381	C	42	...	13	...	...	39	34	100	100	100	100	D. R. Alexander, M.D.	Sept. 4	May 19		58
59	Ensworth Medical College, St. Joseph (k)	77,403	C	20	...	7	...	...	27	32	...	...	...	125	T. E. Potter, Secretary	Sept. 1	May 1		59
60	American Medical College, St. Louis	687,039	C	196	15	29	4	...	101	34	140	135	135	135	James Moores Ball, M.D., Dean	Sept. 23	June 6		60
61	St. Louis University, School of Medicine	687,029	A	233	...	69	...	2	110	33	130	130	130	130	A. C. Eyclesbymer, M.D., Acting Dean	Oct. 1	June 7		61
62	St. Louis College of Physicians and Surgeons	687,029	C	52	8	18	1	...	46	32	110	105	100	95	E. T. Brand, M.D., Secretary	Sept. 15	May 17		62
63	Washington University Medical School, St. Louis	687,029	A+	66	...	28	...	4	81	34	155	150	150	155	E. L. Opie, M.D., Dean	Sept. 25	June 11		63
	NEBRASKA			**279**	**16**	**50**	**6**	**10**											
64	John A. Creighton Medical College, Omaha	124,096	B	178	4	36	3	3	48	32	140	120	130	130	A. L. Muirhead, M.D., Dean	Sept. 1	April 30		64
65	University of Nebraska, College of Medicine, Omaha	124,096	A	71	7	7	2	7	58	35	111	100	100	105	Robert Henry Wolcott, M.D., Dean, Lincoln	Sept. 9	May 29		65
66	Cotner Medical College.—E	43,973	C	30	5	7	1	...	32	34	100	100	100	100	R. L. Hoff, Registrar, Bethany, Neb	Sept. 9	May 28		66
	NEW HAMPSHIRE			**27**	...	**10**	...	**3**											
67	Dartmouth Medical School, Hanover (l)	2,075	A	27	...	10	...	3	24	34	160	162	125	125	John M. Gile, M.D., Dean	Aug. 5	April 24		67
	NEW YORK			**2133**	**71**	**446**	**14**	**99**											
68	Albany Medical College, Albany	100,253	A	239	...	48	...	2	103	32	120	145	120	130	Willis G. Tucker, M.D., Registrar	Sept. 23	May 26		68
69	Columbia University, College of Phys. and Surg., New York	4,766,883	A+	339	...	99	...	57	207	33	255	250	250	275	Samuel W. Lambert, M.D., Dean	Sept. 24	June 3		69
70	Cornell University Medical College, New York City	4,766,883	A+	90	12	16	3	19	147	33	190	195	185	190	J. S. Ferguson, M.D., Secretary	Oct. 1	June 11		70
71	Fordham University, School of Medicine, New York City	4,766,883	B	136	...	31	...	3	93	34	200	200	200	200	William P. Healy, M.D., Dean	Sept. 26	June 10		71
72	Long Island College Hospital, New York City	4,766,883	B	438	...	69	...	...	81	33	210	205	205	200	Joseph H. Raymond, M.D., Dean	Sept. 23	June 1		72
73	New York Homeopathic Medical College and Hospital.—H	4,766,883	A	245	...	45	...	10	85	31	165	160	150	180	Royal S. Copeland, M.D., Dean	Oct. 1	May 29		73
74	New York Medical College and Hospital for Women.—H	4,766,883	C	....	45	...	9	...	56	31	155	150	135	155	Emily C. Charles, M.D., Dean	Oct. 1	May 20		74
75	University and Bellevue Hospital Medical College, New York	4,766,883	A+	352	...	76	...	2	179	34	205	200	200	225	Egbert Le Fevre, M.D., Dean	Sept. 24	June 10		75
76	Syracuse University, College of Medicine, Syracuse	137,249	A+	87	...	21	...	4	71	33	186	186	146	161	John L. Heffron, M.D., Dean	.....	.....		76
77	University of Buffalo, Medical Department, Buffalo	423,715	A	207	14	41	2	2	90	34	185	180	140	140	Herbert U. Williams, M.D., Dean	Sept. 22	June 5		77
	NORTH CAROLINA			**265**	**1**	**47**	**1**	**8**											
78	Leonard Medical School, Raleigh	19,218	C	97	...	22	...	8	14	30	57	57	57	67	Charles F. Meserve, President	Oct. 1	May 14		78
79	University of North Carolina, Medical Department, Chapel Hill	1,149	A	54	...	...	...	...	29	35	115	116	...	...	Isaac Hall Manning, M.D., Dean	Sept. 8	June 3		79
80	North Carolina Medical College, Charlotte	34,014	C	84	1	25	1	...	42	32	107	102	100	130	W. O. Nisbet, M.D., Dean	Oct. 1	June 1		80
81	Wake Forest School of Medicine, Wake Forest	1,443	A	30	...	...	...	...	9	35	102	103	...	...	William Louis Poteat, President	Sept. 2	May 22		81
	NORTH DAKOTA			**11**	**3**	...	...	...											
82	University of North Dakota, Medical Department, University	12,478	A	11	3	...	...	...	10	35	50	50	...	...	Harley E. French, M.D., Dean	Sept. 23	June 17		82
	OHIO			**654**	**24**	**174**	**7**	**39**											
83	Cleveland College of Physicians and Surgeons, Cleveland (m)	560,663	....	17	...	16	...	...	...	...	...	...	...	...	.....	.....	.....		83
84	Cleveland-Pulte Medical College, Cleveland.—H	560,663	C	75	10	19	4	...	53	33	125	125	125	125	George H. Quay, M.D., Dean	Oct. 1	June 12		84
85	Western Reserve University School of Medicine, Cleveland	560,663	A+	144	...	22	...	21	96	34	162	155	150	155	F. C. Waite, M.D., Secretary	Oct. 2	June 18		85
86	Eclectic Medical College, Cincinnati.—E	363,591	B	82	7	24	2	1	35	32	100	100	100	100	John K. Scudder, M.D., Secretary	Sept. 11	May 11		86
87	Ohio-Miami Medical College of the University of Cincinnati	363,591	A+	77	3	26	...	4	124	34	150	150	150	150	Paul G. Woolley, M.D., Dean	Oct. 1	June 13		87
88	Starling-Ohio Medical College, Columbus	181,511	A	227	4	52	1	13	64	32	150	150	150	150	W. J. Means, M.D., Dean	Sept. 24	May 27		88
89	Toledo Medical College, Toledo	169,497	C	32	...	15	...	...	50	32	137	132	125	125	L. A. Brewer, M.D., Dean	Oct. 1	May 31		89
	OKLAHOMA			**28**	**4**	**8**	**1**	**1**											
90	Univ. of Oklahoma, School of Med., Norman and Oklahoma City	64,205	B	28	4	8	1	1	36	30	55	28	100	105	W. J. Jolly, M.D., Dean	Sept. 25	June 11		90
	OREGON			**93**	**8**	**23**	**1**	**5**											
91	University of Oregon, Medical Department, Portland	207,214	A	50	7	18	1	4	60	34	155	150	150	150	K. A. J. Mackenzie, M.D., Dean	Oct. 1	June 15		91
92	Willamette University, Medical Department, Salem (n)	14,094	C	43	1	10	...	1	...	...	...	...	...	...	.....	.....	.....		92
	PENNSYLVANIA			**1536**	**104**	**377**	**25**	**73**											
93	Hahnemann Medical College and Hospital, Philadelphia.—H	1,549,008	A	92	...	31	...	4	88	33	180	180	180	180	William B. Van Lennep, M.D., Dean	Sept. 22	June 4		93
94	Jefferson Medical College, Philadelphia	1,549,008	A	680	...	126	...	17	156	34	180	180	180	180	Ross V. Patterson, M.D., Sub-Dean	Sept. 24	June 6		94
95	Medico-Chirurgical College of Philadelphia	1,549,008	A	314	...	64	...	...	112	34	157	159	156	153	Seneca Egbert, M.D., Dean	Sept. 22	June 5		95
96	Temple University, Medical Department, Philadelphia	1,549,008	B	58	11	12	1	2	97	34	150	150	150	150	Frank C. Hammond, M.D., Dean	Sept. 18	June 6		96
97	University of Pennsylvania, Department of Medicine, Philadelphia	1,549,008	A+	307	...	100	...	42	173	35	229	212	210	211	William Pepper, M.D., Dean	Sept. 26	June 17		97
98	Woman's Medical College of Pennsylvania, Philadelphia	1,549,008	A	....	93	...	24	4	60	34	187	181	179	180	Clara Marshall, M.D., Dean	Sept. 17	June 3		98
99	University of Pittsburgh, Medical Department, Pittsburgh	533,905	A	145	...	44	...	4	98	34	235	220	220	225	Thomas S. Arbuthnot, M.D., Dean	Sept. 29	June 17		99

TABLE 1.—STATISTICS OF MEDICAL COLLEGES IN THE UNITED STATES AND CANADA.—(*Concluded.*)

Marginal Number.	NAME AND LOCATION OF COLLEGE.	Population of city where college is located. (Census of 1910.)	Classification by Council on Medical Education	No. of students registered 1912-13.		Graduates 1913.		Grads. with A.B., B.S., or Ph.B.	No. of teachers.	Weeks in college year.	Total Fees (Dollars.)				Executive Officer	Session of 1913-14.		Marginal Number.
				Men.	Women.	Men.	Women.				1st year.	2nd year.	3rd year.	4th year.		Begins 1913.	Ends 1914.	
	SOUTH CAROLINA			118	...	30	...	4										
100	Medical College of South Carolina, Charleston	58,833	B	118	...	30	...	4	44	32	100	100	100	75	Robert Wilson, Jr., M.D., Dean	Oct. 1	June 4	100
	SOUTH DAKOTA			13	...	...	...	...										
101	University of South Dakota, College of Medicine, Vermillion	2,187	A	13	...	...	...	...	9	25	60	60	...	...	Christian P. Lommen, B.S., Dean	Sept. 16	June 11	101
	TENNESSEE			1205	8	314	1	18										
102	Lincoln Memorial University, Medical Department, Knoxville	36,346	C	97	1	19	...	...	36	32	110	105	105	125	Charles P. McNabb, M.D., Dean	Sept. 23	May 20	102
103	Meharry Medical College, Nashville	110,364	A	318	4	88	...	7	28	30	60	60	60	75	George W. Hubbard, M.D., Dean	Sept. 10	April 21	103
104	Vanderbilt University, Medical Department, Nashville	110,364	A	365	...	71	...	10	65	31	150	150	150	175	William L. Dudley, M.D., Dean	Sept. 18	May 12	104
105	University of Tennessee, College of Medicine, Memphis	131,105	B	109	3	36	1	1	90	34	125	125	125	150	Herbert V. Brooks, M.D., Dean	Sept. 22	June 5	105
106	Memphis Hospital Medical College, Memphis (o)	131,105	B	271	...	87	...	...	...	...	...	...	...	...	.....	.....	.....	106
107	University of West Tennessee, Medical Department, Memphis	131,105	C	45	...	13	...	...	18	30	55	55	55	65	M. V. Lynk, M.D., Dean	Sept. 15	May 1	107
	TEXAS			331	13	84	6	9										
108	Fort Worth School of Medicine, Fort Worth	73,312	C	60	...	12	...	...	59	35	114	113	108	125	I. C. Chase, M.D., Dean	Sept. 8	June 4	108
109	University of Texas, Department of Medicine, Galveston	36,981	A+	140	13	39	4	8	27	32	61	31	21	6	William S. Carter, M.D., Dean	Oct. 1	May 30	109
110	Baylor University, College of Medicine, Dallas	92,104	B	67	4	19	2	...	47	32	120	115	115	125	Edward H. Cary, M.D., Dean	Sept. 29	May 28	110
111	Southern Methodist University, Medical Department, Dallas	92,104	C	64	1	14	...	1	37	32	110	105	100	125	John O. McReynolds, M.D., Dean	Oct. 1	May 29	111
	UTAH			21	2	...	...	...										
112	University of Utah, School of Medicine, Salt Lake City	92,777	A	21	2	...	...	...	14	34	55	55	...	...	J. T. Kingsbury, President	Sept. 15	May 29	112
	VERMONT			140	...	37	...	...										
113	University of Vermont, College of Medicine, Burlington	20,468	A	140	...	37	...	...	48	36	140	140	140	165	H. C. Tinkham, M.D., Dean	Sept. 24	June 24	113
	VIRGINIA			537	...	97	...	14										
114	Medical College of Virginia, Richmond	127,628	A	240	...	43	...	4	122	34	164	164	164	194	Stuart McGuire, M.D., Dean	Sept. 16	June 2	114
115	University College of Medicine, Richmond (p)	127,628	A	176	...	40	...	3	...	...	...	...	...	...	.....	.....	.....	115
116	University of Virginia, Department of Medicine, Charlottesville	6,765	A+	91	...	14	...	7	32	36	140	140	140	140	R. H. Whitehead, M.D., Dean	Sept. 11	June 17	116
	WEST VIRGINIA			8	...	...	...	...										
117	West Virginia University, School of Medicine, Morgantown (q)	9,150	B	8	...	...	...	...	9	36	50	50	...	...	John N. Simpson, M.D., Dean	Sept. 15	June 17	117
	WISCONSIN			339	10	75	3	8										
118	Marquette University School of Medicine, Milwaukee (r)	373,857	....	278	5	75	3	8	116	34	165	160	155	155	Louis F. Jermain, M.D., Dean	Oct. 1	June 18	118
119	University of Wisconsin, College of Medicine, Madison (s)	25,531	A+	61	5	...	...	...	24	35	154	154	...	...	Charles R. Bardeen, M.D., Dean	Sept. 25	June 17	119
	PHILIPPINE ISLANDS			63	9	8	...	...										
120	University of the Philippines, College of Med. and Surg., Manila (t)	234,409	....	63	9	8	...	...	62	36	...	...	...	...	W. E. Musgrave, M.D., Dean	July 1	April 2	120
	CANADA			1713	25	303	2	38										
121	Dalhousie University, Faculty of Medicine, Halifax, N. S. (u)	46 619	....	74	4	7	...	3	29	32	100	100	100	100	A. W. H. Lindsey, M.D., Dean	Sept. 2	April 30	121
122	Queen's University, Faculty of Medicine, Kingston, Ont. (u)	18,874	....	251	...	40	...	...	39	30	105	105	105	135	J. C. Connell, M.D., Dean	Sept. 15	April 29	122
123	Western University, Faculty of Medicine, London, Ont. (u)	46 300	....	108	...	27	...	1	30	30	100	100	100	100	W. E. Waugh, M.D., Registrar	Sept. 17	May 3	123
124	McGill University, Medical Faculty, Montreal, Que. (u)	470,480	....	365	...	61	...	9	119	33	150	150	150	190	John W. Scane, M.D., Registrar	Oct. 1	June 9	124
125	Montreal School of Medicine and Surgery, Montreal, Que. (u)	470,480	....	180	...	35	...	...	60	32	110	118	126	138	E. P. Lachapelle, M.D., Dean	Oct. 1	June 20	125
126	Laval University, Medical Faculty, Quebec, Que. (u)	78,100	....	66	...	22	...	...	24	34	60	60	60	60	Michael J. Ahern, M.D., Dean	Sept. 1	June 1	126
127	University of Toronto, Medical Faculty, Toronto, Ont. (u)	376,538	....	516	17	84	1	24	173	32	150	150	150	150	A. Primrose, M.D., Secretary	Sept. 30	May 31	127
128	University of Manitoba, Manitoba Medical College, Winnipeg (u)	136,036	....	150	4	27	1	1	54	29	155	150	150	150	H. H. Chown, M.D., Dean	Sept. 24	May 1	128

H., Homeopathic; E., Eclectic

REFERENCES TO TABLE 1.

(a) These two colleges have merged, taking the name of Atlanta Medical College.

(b) This college has been closed.

(c) The Jenner Medical College is reported to be not fully recognized by twenty-nine different state licensing boards.

(d) This college has merged with the State University of Iowa College of Medicine and Surgery.

(e) This college has merged with the University of Kansas School of Medicine.

(f) This college has merged with the University of Maryland School of Medicine.

(g) This college is reported to have closed.

(h) The approximate number of medical students actually attending is given; the college reported 181 "matriculants and applicants" which include also the dental classes. This college is reported as not recognized by the Massachusetts Medical Society.

(i) This college gave only the last two, or clinical years of the medical course. It is reported to have closed.

(j) This college is reported as not recognized by the Missouri State Board of Health and by twenty other state licensing boards.

(k) This college will close next year when the one class still enrolled will be graduated.

(l) Dartmouth Medical School will discontinue teaching the clinical years after the class of 1914 has graduated.

(m) This college merged with Western Reserve University School of Medicine in 1910, with the understanding that all classes then enrolled would receive their degrees from the former college. This year the last class received degrees.

(n) This college has merged with the University of Oregon, Medical Department.

(o) This college has merged with the University of Tennessee, Medical Department.

(p) This college and the Medical College of Virginia have been merged, retaining the name of the latter.

(q) Two years ago this institution was closed as a "College of Medicine" but was later restored as a "School." It is stated there was no intention to discontinue medical teaching.

(r) This is a new medical school, an integral part of Marquette University, formed by purchase of the property of the Wisconsin College of Physicians and Surgeons and by lease of the property of the Milwaukee Medical College, both of these institutions having been closed.

(s) The fees charged by this college are only $80 per year for citizens of the state. Similar reductions are made by the medical schools of the University of Michigan, for residents of that state.

(t) This college is financed by the government and no tuition fees are charged.

(u) All the Canadian medical schools now have a "five-year medical course," but this includes a preliminary year devoted largely to courses in physics, chemistry and biology. It is the equivalent therefore to the courses given by the medical schools in the United States which require for admission one year of collegiate work including the sciences mentioned. On the same basis medical colleges in the United States which require two or more years of collegiate work for admission may be said to require a six-year course, or, if the hospital intern year be added, a seven-year course.

Of the twenty-seven state medical schools, twenty give the complete medical course and grant M.D. degrees while seven give only the first two years of the medical course. Minnesota now requires a five-year course, the fifth year to be spent by the student in a hospital as an intern, or in other recognized clinical work. The universities of Iowa and Michigan have Homeopathic departments. In Iowa the entrance requirements are the same for the two departments but in Michigan, while for the regular department two years of collegiate work are required for entrance, only one year is required for the Homeopathic College; nevertheless, the students of the two colleges are taught together in the work of the first two years.

As may be noted, thirteen of these state university medical schools are now requiring for admission two years of collegiate work. The medical schools of the Universities of Georgia and Illinois have adopted the two-year requirement to become effective in 1914. The medical school of the University of Alabama has announced the two-year requirement to take effect in 1915. As already shown the state schools are supported in this requirement by the state licensing boards in Colorado, Indiana, Iowa, Minnesota, North Dakota and South Dakota. Of the fourteen other state university medical schools eight are still requiring for admission a standard four-year high-school course and six are requiring in addition one year of collegiate work.

The Combined Course in Liberal Arts and Medicine

There are fifty medical schools which announce that arrangements have been made whereby students can secure degrees in both arts and medicine in six or seven years' time. Many have arranged for the B.S. and M.D. degrees in six years, or the A.B. and M.D. degrees in seven years. The list of medical schools follows:

College	*B.S. and M.D.*	*A.B. and M.D.*
University of Alabama, School of Medicine	6	7
Leland Stanford Junior University, Dept. of Med.	..	7
University of California, Medical Department	7	7
College of Physicians and Surgeons, Los Angeles	6	..
College of Medical Evangelists, Loma Linda*	..	7
University of Colorado, School of Medicine	6	7
Yale Medical School, New Haven	6	7
University of Georgia, School of Medicine	6	..
Bennett Medical College, Chicago	6	..
Chicago College of Medicine and Surgery, Chicago	6	..
College of Physicians and Surgeons, Chicago	6	..
Northwestern University Medical School, Chicago	6	..
Rush Medical College, Chicago	6	7
Indiana University School of Medicine	6	7
State University of Iowa, College of Medicine	6	7
State University of Iowa, College of Homeopathic Medicine, Iowa City.—H	6	7
University of Kansas, School of Medicine	..	6
University of Louisville, Medical Dept., Louisville	6	..
Tulane University, School of Medicine	..	7
University of Maryland, School of Medicine	..	7
Boston University, School of Medicine.—H	6	..
Tufts College Medical School, Boston	..	7
University of Michigan, Dept. of Med. and Surg.	6	7
University of Michigan, Homeopathic College, Ann Arbor—H	6	7
University of Minnesota Medical School†	7	8
University of Missouri, School of Medicine	..	6
St. Louis University, School of Medicine	6	..
American Medical College, St. Louis	6	..
University of Nebraska, College of Medicine	6	7
Cotner Medical College.—E	6	..
Dartmouth Medical School, Hanover	6 (4)	7
Albany Medical College, Albany	..	7
Columbia University, College of Phys. and Surg.	6	7
Cornell University Medical College, New York City	..	7
Fordham University School of Medicine, New York	6	..
University and Bellevue Hospital Medical College	6	7
Syracuse University, College of Medicine, Syracuse	6	7
University of North Carolina, Med. Dept.	6 (4)	..
Wake Forest School of Medicine, Wake Forest	6 (4)	6 (4)
University of North Dakota, Medical Department	..	6 (4)
Cleveland-Pulte Medical College, Cleveland.—H	6	7
Western Reserve University, School of Medicine	..	7
Ohio-Miami Med. Coll. of the Univ. of Cincinnati	6	7
University of Oklahoma, School of Medicine	6	..
Temple University, Medical Department	..	7
University of Pittsburgh, School of Medicine	6	..
University of South Dakota, College of Medicine	6	..
University of Texas, Department of Medicine	6	7
University of Utah, School of Medicine	6	..
University of Wisconsin, College of Medicine	6	7

*This college requires a five-year course in medicine and theology, and the combined arts-medical-theological course is seven years.

†Two years in college and five years in medicine for the B.S. and M.D. degrees; three years in college and five years in medicine for the A.B. and M.D. degrees. The five-year medical course includes the hospital intern year

Proportion of Physicians to Population

State.	Population.	Physicians.	People to each Physician.
Alabama	2,138,093	2,418	884
Arizona	204,354	247	868
Arkansas	1,574,449	2,596	606
California	2,377,549	4,767	499
Colorado	709,024	1,772	451
Connecticut	1,114,756	1,564	713
Delaware	202,322	246	822
District of Columbia	331,069	1,350	245
Florida	752,619	974	773
Georgia	2,609,121	3,022	863
Idaho	325,594	420	775
Illinois	5,638,591	9,988	565
Indiana	2,700,876	4,984	542
Iowa	2,224,771	3,653	609
Kansas	1,690,549	2,688	625
Kentucky	2,289,105	3,601	636
Louisiana	1,656,388	1,930	858
Maine	742,371	1,176	631
Maryland	1,295,346	1,972	657
Massachusetts	3,366,416	5,648	593
Michigan	2,810,173	4,104	685
Minnesota	2,075,708	2,262	918
Mississippi	1,797,114	6,032	298
Missouri	3,293,335	6,037	546
Montana	376,053	512	734
Nebraska	1,192,214	1,796	664
Nevada	81,875	144	569
New Hampshire	430,572	704	612
New Jersey	2,537,167	2,884	880
New Mexico	327,301	430	761
New York	9,113,614	14,815	615
North Carolina	2,206,287	1,849	1,193
North Dakota	577,056	594	973
Ohio	4,767,121	7,513	635
Oklahoma	1,657,155	2,620	633
Oregon	672,765	1,041	646
Pennsylvania	7,665,111	11,345	676
Rhode Island	542,610	751	723
South Carolina	1,515,400	1,275	1,189
South Dakota	583,888	651	897
Tennessee	2,184,789	3,338	655
Texas	3,896,542	5,888	662
Utah	373,351	427	874
Vermont	355,950	679	524
Virginia	2,061,612	2,359	874
Washington	1,141,990	1,630	701
West Virginia	1,221,119	1,639	745
Wisconsin	2,333,860	2,652	880
Wyoming	145,965	235	621
Army, Navy, P. H. S.	.....	968	...
Total	91,972,266	142,190	640

COLLEGE NOTES

Colleges Closed During the Year.—Fourteen medical colleges have been closed during the year. Eight were closed by merger into other medical schools and six became extinct. The colleges are:

Atlanta College of Physicians and Surgeons and the Atlanta School of Medicine merged taking the name of the Atlanta Medical College.

Hering Medical College, Chicago, reported closed.

Drake University College of Medicine, Des Moines, Iowa, merged into the State University of Iowa, College of Medicine.

Kansas Medical College Topeka, merged into the University of Kansas School of Medicine.

Baltimore Medical College, merged with the University of Maryland School of Medicine.

Maryland Medical College, reported closed.

University Medical College, Kansas City, Missouri, reported closed.

Eclectic Medical College of the City of New York, reported closed.

Willamette University Medical Department, Salem, Oregon, merged with the University of Oregon, Medical Department at Portland.

Memphis Hospital Medical College, merged with the University of Tennessee College of Medicine.

University College of Medicine, Richmond, merged with the Medical College of Virginia.

Milwaukee Medical College, closed.

Wisconsin College of Physicians and Surgeons, closed.

Marginal Number.	NAME OF COLLEGE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Marginal Number.
		Alabama.....414	Arizona.....14	Arkansas.....200	California.....336	Colorado.....73	Connecticut.....204	Delaware.....26	Dist. of Col.....96	Florida.....129	Georgia.....700	Idaho.....29	Illinois.....1,814	Indiana.....395	Iowa.....344	Kansas.....326	Kentucky.....200	Louisiana.....217	Maine.....129	Maryland.....262	Massachusetts..686	
1	Birmingham Medical College, Birmingham	91								2	1						1	1				1
2	University of Alabama, Medical Dept., Mobile	108								2								1				2
3	University of Arkansas, Medical Dept., Little Rock			94	1											2		1				3
4	College of Phys. and Surgs., San Francisco				8								1	1		2						4
5	Hahnemann Medical College of the Pacific.—H*				38																	5
6	Leland Stanford Junior Univ., Dept. of Med				40	1											1					6
7	Univ. of California, Med. Dept., San Francisco				97								1								1	7
8	California Eclectic Med. Coll., Los Angeles.—E*				20																	8
9	College of Physicians and Surgeons, Los Angeles		1		26	2	1		1				6	6	13	4	1				3	9
10	University of California, Los Angeles Department				6											1						10
11	Oakland Coll. of Medicine and Surgery, Oakland				13																	11
12	College of Medical Evangelists, Loma Linda		1		11	2			2				1	1	1	1						12
13	Univ. of Colorado, School of Med., Boulder-Denver	2	1	1	2	28	1				1	1	5	2	9	4				1	1	13
14	Yale Medical School, New Haven						27						1								2	14
15	George Washingtton University, Dept. of Med				2		1		33	1			1	1	1				2	4	1	15
16	Georgetown University, School of Medicine				1	1	7		37				1						2	6	28	16
17	Howard University, School of Med., Washington	4		2			1	1	14	4	5		2				3	2		10	1	17
18	Atlanta College of Phys. and Surgs., Atlanta	26			1					28	197						1	2				18
19	Atlanta School of Medicine, Atlanta	10								16	163							1				19
20	Georgia College of Eclectic Med. and Surg.—E*										70											20
21	Southern College of Med. and Surg., Atlanta*										53											21
22	University of Georgia, Med. Dept., Augusta					1			4	66												22
23	Bennett Medical College, Chicago	1		2			1			3	3		198	11	9	1	2	2	1	1		23
24	Chicago College of Medicine and Surgery, Chicago	10	2	4	4		4			2	1	2	253	51	17	11	4	2		1	10	24
25	Hahnemann Med. Coll. and Hosp., Chicago.—H					1						1	39	5	11	3	1		1		1	25
26	Hering Medical College, Chicago.—H												26	1	1		1					26
27	Jenner Medical College, Chicago	1		2		1							60	4	10	3	4				4	27
28	Northwestern University, Medical School, Chicago			1		2				1		1	78	2	13	8		1			1	28
29	Rush Medical College (Univ. of Chicago)	3		1	2	1				1	2	3	149	16	24	18	3	3		1		29
30	University of Illinois, College of Medicine, Chicago				1	4			1		1	1	266	29	21	12		2			1	30
31	Indiana University, School of Med., Indianapolis			1			1							140								31
32	Drake University, College of Med., Des Moines						1					2			32							32
33	State Univ. of Iowa, College of Med., Iowa City												1		33	1						33
34	State Univ. of Iowa, College of Homeo. Med.—H														9							34
35	Kansas Medical College, Topeka			1												31						35
36	Univ. of Kansas, School of Med., Kansas City	1				1										57						36
37	University of Louisville, Med. Dept., Louisville	3	1		1					4	7		17	55	4	3	80	3				37
38	Tulane University School of Medicine	28		11	2	1				8	12		1	1		1	3	129				38
39	Medical School of Maine, Portland						2												66		2	39
40	Baltimore Medical College, Baltimore	2			1		10	1					1							22	20	40
41	College of Physicians and Surgeons, Baltimore						19			1	1		1							29	18	41
42	Johns Hopkins University, Med. Dept., Baltimore	11		2	12		7	2	2		19		8	8	8	3	10	4	2	53	8	42
43	Maryland Medical College, Baltimore						8				1						1	1		12	7	43
44	University of Maryland, School of Medicine	3		1			5	2	—	5	6							1	1	108	1	44
45	Boston University, School of Medicine.—H				1		1									1			7		47	45
46	College of Physicians and Surgeons, Boston†																				80	46
47	Harvard Medical School, Boston	1			11	5	2			1	2		7	4	7	4	1		14	2	123	47
48	Tufts College Medical School, Boston		1				11				2		1						9		252	48
49	Detroit College of Medicine, Detroit									1				6								49
50	Univ. of Michigan, Dept. of Med. and Surg	2			1	1					5		5	7	4	2	4				2	50
51	Univ. of Michigan, Homeo. Coll., Ann Arbor.—H								1				2	2			1		1	2	1	51
52	University of Minnesota, Medical School											1	3		2	1						52
53	University of Mississippi, Medical Dept., Oxford																					53
54	University of Missouri, Med. Dept., Columbia				1								1			1						54
55	Kansas City Hahnemann Medical College.—H														2	17						55
56	University Medical College, Kansas City			1											2	22						56
57	Eclectic Medical University, Kansas City†															14						57
58	Ensworth Medical College, St. Joseph			1									1		1	5						58
59	American Medical College, St. Louis	2		2						1		3	48	1	3	6	4					59
60	St. Louis University, School of Medicine		2	1		3	1					2	69	10	10	8	3		1			60
61	St. Louis College of Phys. and Surgs			2									21	1			2					61
62	Washington University, Medical Dept., St. Louis				1								13	1	2	2						62
63	Creighton Medical College, Omaha		1			5							3		21	6						63
64	University of Nebraska, College of Med., Omaha					1									5	1						64
65	Cotner Medical College.—E*																					65
66	Dartmouth Medical School, Hanover						2												1		10	66
67	Albany Medical College, Albany						1														7	67
68	Columbia Univ., College of Phys. and Surgs	3		1	2	4	11		1		3	2					1		3	1	6	68
69	Cornell Univ. Medical College, New York City				3		3								2						3	69
70	Fordham Univ., School of Med., New York City						9			1				1							1	70
71	Long Island College Hospital, New York City		1				4						2								3	71
72	New York Homeo. Med. Coll. and Hosp.—H				5		7		1		2			1	1				1			72
73	New York Med. Coll. and Hosp. for Women.—H						1															73
74	Univ. and Bellevue Hosp. Med. Coll., New York				1		9		1				1								3	74
75	Syracuse Univ., College of Medicine, Syracuse							1								1						75
76	University of Buffalo, Medical Dept., Buffalo													1							1	76
77	Leonard Medical School, Raleigh	3							1	6	7						2	1				77
78	Univ. of North Carolina, Med. Dept., Chapel Hill									2												78
79	North Carolina Medical College, Charlotte																					79
80	Wake Forest School of Medicine, Wake Forest																					80
81	University of North Dakota, Medical Dept														1							81
82	Cleveland-Pulte Medical College, Cleveland.—H*																					82
83	Western Reserve University, School of Medicine	1			1								2	5	1	2	1				1	83
84	Eclectic Medical College, Cincinnati.—E			3	1						1		1	4			4					84
85	Ohio-Miami Med. Coll. of the Univ. of Cincinnati												1	2			12					85
86	Starling-Ohio Medical College, Columbus				1								1	2							1	86
87	Toledo Medical College, Toledo																					87
88	University of Oklahoma, School of Med., Norman												2			4						88
89	University of Oregon, Medical Dept., Portland																				1	89
90	Willamette University, Medical Dept., Salem																					90
91	Hahnemann Medical College and Hospital.—H						1	1														91
92	Hahnmann Medical College and Hospital.—H					1	16	11		3	7	3	3	4	4	5	8	2	6	2	8	92
93	Medico-Chirurgical College of Philadelphia	1			1	1	5	1					2							1		93
94	Temple University, Medical Dept., Philadelphia						1		1		1			1								94
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	

* Information showing exact distribution not obtained. † Number of students approximate. H.—Homeopathic. E.—Eclectic.

Marginal Number.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	Marginal Number.
	Michigan.....408	Minnesota.....318	Mississippi.....324	Missouri.....562	Montana.....30	Nebraska.....281	Nevada.....4	New Hampshire..54	New Jersey.....404	New Mexico.....8	New York.....2,008	North Carolina.485	North Dakota...60	Ohio.....705	Oklahoma.....112	Oregon.....122	Pennsylvania.1,875	Rhode Island....80	South Carolina.308	South Dakota...60	Tennessee.....436	Texas.....504	Utah.....61	Vermont.....83	Virginia.....448	Washington.....85	West Virginia...191	Wisconsin.....474	Wyoming.....10	Philippines, etc..89	Foreign.....562	Totals.....17,015	
1	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	3	102	1
2	.....	.....	3	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	7	.....	.....	.....	.....	.....	.....	18	.....	.....	.....	.....	.....	.....	.....	.....	.....	115	2
3	.....	.....	1	1	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	3	110	3
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5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	1	.....	.....	1	1	.....	1	.....	.....	1	1	2	38	5
6	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	53	6
7	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	104	7
8	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	20	8
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10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7	10
11	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	13	11
12	12	1	.....	2	1	5	.....	.....	1	3	4	.....	.....	1	1	1	2	1	.....	.....	3	6	.....	.....	2	.....	1	.....	1	.....	10	62	12
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14	.....	.....	.....	.....	.....	.....	.....	.....	3	.....	3	.....	.....	2	.....	.....	1	1	.....	.....	.....	.....	.....	.....	6	1	2	.....	.....	2	6	103	14
15	.....	2	.....	.....	1	1	.....	1	3	.....	14	3	.....	1	.....	.....	9	2	.....	1	1	.....	.....	.....	1	1	2	1	.....	3	5	126	15
16	1	.....	.....	.....	.....	.....	.....	.....	6	.....	7	10	1	3	.....	.....	3	1	.....	1	1	5	.....	.....	12	.....	1	.....	.....	.....	13	122	16
17	.....	.....	1	2	.....	.....	.....	.....	5	.....	3	8	.....	.....	.....	.....	1	1	9	.....	5	6	.....	2	.....	.....	1	.....	.....	.....	1	338	17
18	.....	.....	13	.....	.....	.....	.....	.....	.....	.....	5	7	.....	.....	.....	.....	1	.....	32	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	222	18
19	.....	.....	4	1	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	70	19
20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	30	20
21	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	80	21
22	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	10-	2	.....	.....	.....	1	1	.....	.....	.....	3	17	.....	20	17	395	22
23	23	10	2	13	.....	5	.....	.....	6	.....	14	3	1	5	6	.....	22	1	1	3	4	5	5	1	4	5	23	16	.....	7	28	642	23
24	17	20	6	15	3	7	2	.....	3	.....	31	3	1	2	3	2	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	1	76	24
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26	6	5	.....	1	.....	1	.....	.....	.....	.....	1	.....	9	1	.....	3	.....	.....	.....	9	1	3	11	1	3	10	13	33	1	1	7	422	26
27	3	15	1	1	3	1	.....	.....	.....	2	2	1	10	8	1	7	3	.....	.....	11	4	3	2	.....	1	9	.....	32	.....	1	22	535	27
28	8	12	1	16	4	7	.....	.....	3	.....	5	.....	2	33	4	1	3	1	.....	10	1	1	2	.....	1	1	9	.....	.....	6	.....	146	28
29	12	27	.....	7	4	8	.....	.....	1	1	3	.....	.....	1	1	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	45	29
30	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	98	30
31	.....	1	.....	2	1	1	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	1	.....	.....	1	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	5	98	31
32	.....	2	.....	3	.....	.....	.....	.....	.....	.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	13	32
33	.....	1	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	33	33
34	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	66	34
35	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	255	35
36	.....	.....	.....	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	5	1	4	.....	1	.....	8	16	.....	.....	1	1	20	1	1	1	2	296	36
37	1	1	6	2	.....	.....	.....	.....	1	.....	.....	3	1	.....	8	.....	1	.....	2	.....	1	37	.....	.....	.....	.....	.....	1	.....	3	1	75	37
38	.....	.....	34	8	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	1	1	38
39	.....	.....	.....	.....	.....	.....	.....	1	7	.....	1	.....	.....	2	.....	.....	1	2	4	.....	.....	.....	1	2	3	6	1	5	.....	.....	22	176	39
40	.....	.....	.....	.....	.....	.....	.....	3	13	.....	30	6	.....	4	.....	.....	30	2	4	.....	.....	.....	7	2	19	3	46	1	.....	.....	33	234	40
41	.....	.....	2	.....	.....	.....	.....	1	13	.....	9	3	.....	21	1	7	29	8	6	3	3	2	1	2	8	13	6	6	1	3	3	351	41
42	1	3	3	8	.....	1	.....	2	11	2	23	11	2	4	1	.....	34	3	31	.....	.....	4	.....	.....	17	10	10	4	.....	20	4	117	42
43	.....	.....	.....	.....	.....	.....	.....	1	11	.....	8	4	.....	3	.....	.....	20	1	3	.....	.....	.....	.....	.....	8	.....	.....	.....	.....	3	14	293	43
44	.....	.....	1	1	.....	.....	1	4	12	1	11	44	.....	1	.....	.....	17	1	2	.....	.....	.....	.....	3	2	.....	.....	.....	.....	.....	19	98	44
45	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	80	45
46	.....	.....	.....	.....	.....	.....	.....	4	.....	.....	.....	.....	.....	.....	.....	.....	11	16	1	2	1	3	2	3	.....	.....	2	4	.....	1	8	285	46
47	.....	3	.....	4	1	1	.....	4	2	.....	20	1	1	9	1	.....	1	12	.....	2	1	.....	.....	2	.....	.....	.....	.....	.....	1	10	317	47
48	.....	.....	.....	.....	.....	.....	.....	13	.....	.....	2	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	22	197	48
49	157	1	.....	2	.....	3	.....	1	3	.....	2	.....	.....	6	1	.....	2	1	.....	.....	3	1	.....	1	1	3	2	2	.....	.....	6	221	49
50	107	3	.....	.....	.....	.....	.....	.....	.....	.....	15	1	.....	21	.....	.....	12	.....	.....	.....	.....	.....	.....	.....	.....	3	1	5	.....	.....	.....	63	50
51	28	1	.....	2	.....	1	.....	.....	.....	.....	8	.....	7	9	1	.....	5	.....	.....	.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	176	51
52	.....	145	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	38	52
53	.....	.....	38	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	45	53
54	.....	.....	.....	39	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	55	54
55	.....	.....	.....	30	.....	2	.....	.....	.....	.....	.....	.....	.....	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	58	55
56	.....	.....	.....	28	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	42	56
57	.....	.....	.....	28	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	20	57
58	.....	.....	.....	11	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	1	4	.....	.....	.....	.....	1	.....	.....	.....	3	211	58
59	.....	1	3	117	.....	1	.....	.....	.....	.....	1	.....	.....	5	.....	6	.....	.....	.....	.....	.....	3	.....	.....	6	.....	9	.....	.....	.....	4	233	59
60	3	4	.....	84	1	3	.....	.....	.....	.....	2	.....	.....	.....	.....	1	.....	.....	.....	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	60	60
61	.....	1	.....	26	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	1	.....	2	.....	.....	1	1	66	61
62	1	.....	.....	42	.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....	.....	1	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	3	182	62
63	1	13	.....	8	3	103	.....	.....	.....	.....	1	.....	.....	1	.....	.....	1	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	3	1	.....	78	63
64	.....	.....	.....	1	.....	67	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	35	64
65	.....	.....	.....	.....	.....	35	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	27	65
66	.....	.....	.....	.....	.....	.....	.....	8	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	239	66
67	1	.....	.....	.....	.....	.....	.....	.....	3	.....	276	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	3	339	67
68	1	1	4	3	.....	3	.....	1	36	1	212	4	.....	4	1	1	12	1	2	.....	1	1	3	2	1	1	.....	1	.....	3	2	102	68
69	.....	.....	.....	.....	.....	.....	.....	.....	9	.....	70	.....	.....	4	.....	.....	3	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	25	136	69
70	.....	.....	.....	.....	.....	.....	.....	.....	7	.....	84	.....	.....	1	.....	.....	1	.....	.....	.....	.....	.....	.....	1	1	.....	.....	.....	.....	.....	5	438	70
71	.....	.....	.....	.....	.....	.....	.....	.....	32	.....	398	.....	.....	.....	.....	.....	5	1	.....	.....	1	1	.....	3	.....	.....	.....	1	.....	1	9	245	71
72	.....	.....	.....	.....	.....	.....	.....	.....	37	.....	168	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	16	45	72
73	.....	.....	.....	.....	.....	.....	.....	.....	7	.....	21	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	4	352	73
74	.....	1	.....	2	.....	.....	.....	.....	59	.....	264	.....	.....	3	.....	.....	1	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	2	.....	.....	5	87	74
75	.....	.....	.....	1	.....	.....	.....	.....	1	.....	72	.....	.....	.....	.....	.....	4	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	1	.....	.....	2	221	75
76	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	207	5	29	2	.....	.....	6	.....	.....	22	.....	.....	.....	.....	12	.....	1	.....	.....	.....	4	97	76
77	.....	.....	1	.....	.....	.....	.....	.....	1	.....	.....	.....	51	.....	.....	.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	54	77
78	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	76	.....	.....	.....	.....	.....	.....	6	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	2	85	78
79	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	30	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	30	79
80	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	14	80
81	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	12	85	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	85	81
82	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	114	2	16	.....	.....	.....	1	.....	.....	2	.....	.....	3	1	.....	.....	2	161	82
83	1	1	1	.....	1	1	1	.....	.....	.....	1	.....	.....	.....	50	2	7	1	1	.....	1	1	1	.....	.....	.....	6	1	.....	.....	.....	89	83
84	1	.....	.....	.....	2	.....	.....	.....	.....	.....	3	.....	.....	.....	59	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	.....	.....	.....	.....	80	84
85	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	108	.....	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	7	.....	.....	1	1	231	85
86	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	32	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	32	86
87	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	18	.....	.....	.....	.....	.....	6	.....	.....	.....	11	1	.....	.....	.....	.....	57	87
88	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	44	.....	.....	.....	.....	.....	.....	.....	.....	11	.....	.....	.....	.....	.....	49	88
89	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	38	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	92	89
90	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	66	1	.....	.....	1	.....	.....	3	7	2	.....	.....	.....	.....	18	680	90
91	.....	.....	.....	1	.....	.....	.....	.....	15	.....	.....	2	.....	.....	26	.....	342	5	11	.....	4	.....	1	3	.....	6	5	8	3	.....	10	314	91
92	1	3	10	2	3	4	.....	2	57	.....	31	29	.....	.....	3	.....	249	.....	1	.....	.....	1	1	3	.....	1	.....	1	3	.....	10	69	92
93	.....	.....	.....	1	.....	.....	.....	.....	21	1	6	.....	.....	.....	.....	.....	49	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	93
94	.....	.....	.....	.....	.....	.....	.....	.....	3	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	94
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	

Marginal Number.	NAME OF COLLEGE	1 Alabama.....414	2 Arizona.....14	3 Arkansas.....200	4 California.....336	5 Colorado.....73	6 Connecticut.....204	7 Delaware.....36	8 Dist. of Col.....96	9 Florida.....129	10 Georgia.....700	11 Idaho.....29	12 Illinois.....1,314	13 Indiana.....395	14 Iowa.....344	15 Kansas.....320	16 Kentucky.....200	17 Louisiana.....217	18 Maine.....129	19 Maryland.....262	20 Massachusetts..686	Marginal Number.
95	University of Pennsylvania, Dept. of Medicine	1	....	....	2	2	1	5	....	1	3	3	2	3	1	4	1	2	....	....	2	95
96	Woman's Medical College of Pennsylvania	....	....	1	1	....	2	1	....	....	....	....	....	....	2	1	....	1	2	....	4	96
97	University of Pittsburgh, Med. Dept., Pittsburgh	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	97
98	Medical College of South Carolina, Charleston	....	....	....	....	....	....	....	....	2	1	....	....	....	....	....	....	....	....	....	....	98
99	Univ. of South Dakota, Coll. of Med., Vermilion	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	99
100	Lincoln Memorial Univ., Med. Dept., Knoxville	....	....	....	....	....	....	....	....	1	....	....	1	....	....	....	20	....	....	....	....	100
101	Meharry Medical College, Nashville	21	....	11	....	....	....	....	....	14	36	....	1	1	....	4	12	12	....	1	....	101
102	Vanderbilt University, Med. Dept., Nashville	27	2	4	5	2	....	....	....	7	14	....	3	2	1	42	....	8	....	....	....	102
103	University of Tennessee, Coll. of Med., Memphis	6	....	9	1	1	....	....	....	1	1	....	2	....	....	1	3	6	....	....	....	103
104	Memphis Hospital Medical College, Memphis	24	....	32	....	....	....	....	....	1	....	....	....	....	....	....	4	20	....	....	....	104
105	Univ. of West Tennessee, Med. Dept., Memphis	1	....	1	....	....	....	....	....	2	1	....	....	....	....	....	....	1	....	1	....	105
106	Forth Worth School of Medicine, Fort Worth	....	....	....	1	....	....	....	....	....	....	....	....	....	....	1	....	1	....	....	....	106
107	University of Texas, Dept. of Med., Galveston	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	1	....	....	....	107
108	Baylor University, College of Medicine, Dallas	2	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	3	....	....	....	108
109	Southern Methodist Univ., Med. Dept., Dallas	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	109
110	Univ. of Utah, School of Med., Salt Lake City	....	....	1	....	....	....	....	....	....	....	2	....	....	1	2	....	....	1	....	....	110
111	Univ. of Vermont, College of Med., Burlington	....	....	....	....	....	18	....	....	....	....	1	....	....	....	....	....	....	8	....	17	111
112	Medical College of Virginia, Richmond	....	....	....	2	....	1	....	....	....	....	....	....	1	....	....	....	1	....	1	....	112
113	University College of Medicine, Richmond	1	....	....	....	....	....	....	....	2	1	....	....	....	....	....	....	....	....	....	....	113
114	Univ. of Virginia, Dept. of Med., Charlottesville	2	....	3	....	....	....	....	1	....	4	1	....	....	....	....	....	1	....	3	2	114
115	West Virginia Univ., Coll. of Med., Morgantown	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	115
116	Marquette Univ., School of Medicine, Milwaukee	....	....	....	....	2	....	....	....	....	....	....	3	1	2	1	....	....	....	....	....	116
117	University of Wisconsin, Coll. of Med., Madison	....	....	....	....	....	....	....	....	....	....	....	5	....	1	....	1	....	....	....	1	117
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	

* Information showing exact distribution not obtained. † Number of students approximate. H.—Homeopathic. E.—Eclectic.

New Colleges.—The Atlanta Medical College was formed by the merger of the Atlanta College of Physicians and Surgeons with the Atlanta School of Medicine. The Marquette University, Milwaukee, Wis., organized its new School of Medicine by taking over the Wisconsin College of Physicians and Surgeons and the Milwaukee Medical College. The Homeopathic College of the State University of Iowa has been reestablished.

In Chicago another "afternoon and evening" medical college has been started called the Chicago Hospital College of Medicine, but, according to an official statement, has not yet secured recognition as being in good standing with the Illinois State Board of Health. At Los Angeles, California, an institution calling itself the Pacific Medical College and Post-Graduate Medical School has been organized but makes a boast of granting credit to practitioners of "drugless therapy" which apparently classifies it among such institutions. At Baltimore a new college was organized, at first called the Eclectic School of Medicine of Milton University. After a short time Milton University is said to have disclaimed any relationship with it, and the name was changed to Eastern University School of Medicine. It has been reported as not recognized by the Maryland State Board of Medical Examiners.

Endowments, New Buildings and Other Incidents Occurring During the Year

Alabama.—The University of Alabama School of Medicine, Mobile, has refused promotion to students who failed to pass all examinations, feeling that students promoted with conditions were doubly handicapped. The action will doubtless have a wholesome effect on the scholarship in that school.

——Birmingham Medical College has transferred all its property to the University of Alabama and will be converted into a graduate school of medicine.

Arkansas.—The University of Arkansas, Medical Department, was granted an appropriation of $36,000 by the legislature for the biennium ending March 31, 1915.

California.—The University of California received $1,000,000 from Mrs. George William Hooper to establish an institute of medical research, in memory of her husband. Another gift of $150,000 was received from John M. Keith for a medical research teaching hospital as a memorial to his wife. Gifts to the amount of $400,000 were also assured to build and equip new departments of the University Hospital. It is proposed to move all four years of the medical course to San Francisco and to place the clinical department on an academic basis. A summer course for graduate students has been established.

——Leland Stanford Junior University College of Medicine dedicated the new Lane Medical Library, Nov. 3, 1912. This is a beautiful structure across the street from the medical college building in which the library was formerly located. Since the transfer of the library to the new building, about $35,000 have been expended in reconstructing the medical building, providing for more laboratories and more space for the out-patient department. A fifth year to be devoted to intern work will be required for the M.D. degree for those entering the session of 1914-15 and thereafter.

——The Los Angeles Medical Department of the University of California has received an appropriation of $45,000 from the State Board of Control of California.

Connecticut.—Yale Medical School received $25,000 from the estate of Cyprian S. Brainerd.

Georgia.—The new medical building of the University of Georgia Medical Department of Augusta was dedicated Jan. 29, 1913. A special course in public health is to be offered and special degrees will be granted to those completing the course.

Illinois.—The University of Illinois has again taken over the College of Physicians and Surgeons of Chicago, this time as a gift from the alumni. The legislature voted an appropriation of $200,000 for two years for its development.

——Rush Medical College has voted to make obligatory for all students entering in 1914 and thereafter, the five-year course including a year as intern in an approved hospital or in other special clinical or laboratory work. This course has been optional since 1905.

——Hahnemann Medical College of Chicago announces subscriptions of $66,460 toward a permanent endowment fund.

Indiana.—The Indiana University received $65,000 for the Medical School and the Robert W. Long Memorial Hospital for the next year and $75,000 annually thereafter. Another gift of $25,000 was received from Dr. Robert W. Long for completing and furnishing the hospital bearing his name. The contract for building this hospital was let for $161,000 and the construction is now well under way.

Louisiana.—Tulane University has enlarged its Medical Department, which is now called the "College of Medicine." It comprises the School of Medicine, School of Tropical Medicine and Graduate School of Medicine.

Maryland.—Johns Hopkins Hospital has had several important additions. The Harriet Lane Home for Children erected at a cost of $300,000; the James Buchanan Brady Urologic Clinic from a gift of $200,000 from Mr. Brady, who has since agreed to give $15,000 annually for maintenance; Mr. William A. Marlburg has made a substantial addition to the gift of

	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	
Marginal Number.	Michigan.....408	Minnesota.....318	Mississippi.....324	Missouri.....562	Montana.....30	Nebraska.....281	Nevada.....4	New Hampshire.54	New Jersey.....404	New Mexico.....8	New York.....2,008	North Carolina.485	North Dakota....60	Ohio.....705	Oklahoma.....112	Oregon.....122	Pennsylvania.1,375	Rhode Island....80	South Carolina.308	South Dakota....60	Tennessee.....435	Texas.....594	Utah.... 61	Vermont.....83	Virginia.....448	Washington.....85	West Virginia...191	Wisconsin.....474	Wyoming.....10	Philippines, etc.80	Foreign.....562	Total.....17,015	Marginal Number.
95	2	1	3	3	....	5	....	....	17	....	13	21	....	4	....	2	109	1	1	....	1	3	....	....	3	5	2	6	1	1	10	307	95
96	1	1	....	....	....	....	....	....	9	....	17	2	....	4	....	....	30	....	1	....	....	1	....	1	....	....	....	....	....	....	11	93	96
97	1	....	....	....	....	....	....	....	1	....	....	1	....	2	....	....	139	....	....	....	....	....	....	....	....	....	....	....	....	....	....	145	97
98	....	....	....	....	....	....	....	....	....	....	....	3	....	....	....	....	....	....	112	....	....	....	....	....	....	....	....	....	....	....	....	118	98
99	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	10	....	....	....	....	....	1	....	....	....	....	....	13	99
100	....	....	1	....	....	....	1	....	....	....	....	8	....	....	....	....	....	....	....	....	60	....	....	....	6	....	....	....	....	....	....	98	100
101	....	....	40	8	....	....	....	....	....	....	....	9	....	3	3	....	....	....	15	....	39	58	....	....	3	....	2	....	....	....	29	322	101
102	....	....	13	13	1	....	....	....	1	....	....	3	....	1	2	....	....	....	7	....	157	46	....	....	2	1	1	....	....	....	....	365	102
103	....	....	16	1	....	....	....	....	....	....	....	1	....	....	3	....	....	....	....	....	55	5	....	....	....	....	....	....	....	....	....	112	103
104	....	....	98	....	....	....	....	....	....	....	....	....	....	....	7	....	....	....	1	....	60	24	....	....	....	....	....	....	....	....	....	271	104
105	....	....	8	....	....	....	....	....	....	....	....	11	....	....	....	....	2	....	3	....	4	5	....	....	4	....	....	....	....	....	1	45	105
106	....	....	....	....	....	....	....	....	....	....	....	....	....	....	6	....	....	....	....	....	....	51	....	....	....	....	....	....	....	....	....	60	106
107	....	....	1	....	....	....	....	....	....	....	....	....	....	....	1	....	1	....	....	....	....	148	....	....	....	....	....	....	....	....	....	153	107
108	....	....	2	....	....	....	....	....	....	....	....	....	....	....	4	....	....	....	....	....	1	58	....	....	....	....	....	....	....	....	....	71	108
109	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	63	....	....	....	....	....	....	....	....	....	65	109
110	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	15	....	....	....	....	....	....	....	....	23	110
111	....	....	....	....	....	....	....	12	3	....	24	....	....	1	....	....	2	3	....	....	....	1	....	45	2	....	....	1	....	....	2	140	111
112	....	....	....	....	....	....	....	....	3	....	5	37	....	....	....	....	3	....	4	....	3	1	....	....	170	....	6	....	....	1	1	240	112
113	....	....	....	....	....	....	....	....	1	....	....	50	....	3	....	....	1	....	5	....	1	....	....	....	95	....	9	....	....	2	5	176	113
114	....	....	7	....	....	....	....	....	....	....	2	8	....	....	1	....	....	....	7	....	2	....	....	....	42	....	2	1	....	....	2	91	114
115	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	7	....	....	1	....	8	115
116	8	28	....	1	1	....	....	....	....	....	3	....	3	....	....	....	....	....	....	....	....	3	....	....	....	....	....	220	....	3	4	283	116
117	....	1	....	1	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	54	....	....	....	60	117
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	

$100,000 from him and the other heirs of Charles L. Marlburg to erect a memorial hospital building of fifty-four rooms for private patients.

——Johns Hopkins Medical School has fixed a limit of about ninety students for each class, owing to the limited space and facilitjes in the various laboratories. Yet the space equipment and facilities are greater than in several other colleges which have not seen any necessity for limitations.

——The University of Maryland School of Medicine received $5,300 from Dr. and Mrs. J. C. Hemmeter toward an endowment fund for the chair of physiology.

Massachusetts.—Harvard Medical School received $50,000 by the will of Abel H. Proctor as an addition to the Ellen Osborn Proctor fund for the study of chronic diseases.

Minnesota.—The University of Minnesota has changed the name of its "College of Medicine" to "Medical School," and the faculty has undergone a complete reorganization.

Missouri.—To Washington University School of Medicine has been given the Pagel collection of books on the history of medicine, comprising 2,500 titles. The new hospital and medical school buildings are rapidly approaching completion.

——St. Louis University School of Medicine is erecting a new three-story addition to its college building at a cost of approximately $10,000, to be occupied by the college office and library and for laboratories for experimental medicine.

New Hampshire.—Dartmouth Medical School has voted to discontinue clinical teaching after the graduation of the class of 1914. This is in recognition that clinical teaching in future will require a larger amount of clinical material than is available at Hanover.

New York.—Albany Medical College has been given a new site near the Albany General Hospital where it is planned to erect a new college building.

——Cornell University Medical College has formed a close affiliation with the New York Hospital. A substantial fund for this purpose was provided by Mr. George F. Baker. Cornell also receives from another donor $1,000 annually for a fellowship in the New York Hospital.

——Columbia University received a gift of $1,566,000 by the will of Mr. George Crocker for a cancer research fund.

——University and Bellevue Hospital Medical College received $25,000 from Mrs. Helen Hartley Jenkins, completing the $100,000 endowment fund for the Marcellus Hartley chair of Medicine.

——Fordham University has completed a new building its School of Medicine at a cost of $250,000.

Nebraska.—The entire four-year course of the University of Nebraska College of Medicine is to be moved to the new medical building in Omaha.

——The John A. Creighton Medical College has received $1,000 toward the endowment of the medical library and an additional sum of $200 annually for maintenance.

Ohio.—Ohio-Miami Medical College of the University of Cincinnati received $125,000 from Mrs. Mary Emery toward the million dollar endowment for the department of pathology. For the endowment of another chair $80,000 was received from the estate of Dr. Francis Brunning. An endowment fund of $50,000 was also received, to be known as the Julie Fries Levy Endowment, the income of which is to be used to further and disseminate medical knowledge. Plans are being laid to secure the needed funds ($250,000) for the erecting of a new medical college building opposite the new Cincinnati City Hospital. It is intended as a memorial to Dr. Daniel Drake, the father of medicine in Ohio.

Oregon.—The Medical Department of the University of Oregon secured an appropriation of $45,000 from the state legislature.

Pennsylvania.—The University of Pennsylvania is erecting a new surgical building at a cost of approximately $300,000. A gift of $50,000 (source not reported) was received to be used to provide for additional hospital beds. The will of Dr. Louis A. Duhring gives $81,000 to the University and its hospital, the income from which is to be used for a department of cutaneous diseases, for scholarships and research along that line and for free beds for such diseases in the University Hospital.

——Jefferson Hospital received $50,000 (source not mentioned) for free hospital beds. One-tenth of the estate of James F. Hope also was left to Jefferson Hospital. The total value of the estate is said to exceed $100,000.

South Carolina.—The Medical College of the State of South Carolina, Charleston, by legislative enactment was made a state institution and also an appropriation of $10,000 was made. A campaign for additional funds for the medical school resulted in raising from the citizens of Charleston $76,000 in subscriptions in ten days' time.

Tennessee.—Vanderbilt University Medical Department has received a gift of $1,000,000 from Mr. Andrew Carnegia.

Wisconsin.—The University of Wisconsin secured an appropriation for $200,000 for a new medical or physics building, with a certainty that the College of Medicine will be better housed whichever building the money is used for.

Name of College.	Enrolled During 1912-13. 1st Yr.	2nd Yr.	3rd Yr.	4th Yr.	Total.
Birmingham Medical Coll., Birmingham	.....	29	27	46	102
Univ. of Alabama, Med. Dept., Mobile..	37	23	20	35	115
Univ. of Ark., Med. Dept.. Little Rock..	18	22	28	42	110
College of P. and S., San Francisco....	2	7	6	4	19
Hahnemann Med. Coll. of Pacific.—H*..	.....	.....	.....	16	38
Leland Stanford Junior University, Dept. of Med., San Francisco.....	21	14	8	10	53
University of California, Medical Dept...	58	26	12	8	104
Univ. of California, Los Angeles Dept...	.....	.....	3	4	7
Cal. Eclec. Med. Coll., Los Angeles.—E*	.....	.....	.....	4	20
College of P. and S., Los Angeles.....	32	33	33	27	125
Oakland Coll. of M. and S., Oakland..	2	3	4	4	13
Coll. of Med. Evangelists, Loma Linda.	17	18	20	7	62
Univ. of Colorado, School of Med.....	15	9	15	51	90
Yale Medical School, New Haven.....	15	10	8	9	42
George Washington Univ., Dept. of Med.	46	20	26	11	103
Georgetown Univ., School of Med.....	7	49	33	37	126
Howard University School of Medicine..	16	31	39	36	122
Atlanta College of P. and S., Aalanta..	65	110	75	88	338
Atlanta School of Medicine, Atlanta....	81	36	64	41	222
Georgia Coll. of Eclec. Med and Surg.*.	.....	.....	.....	42	70
Southern Coll. of M. and S., Atlanta*..	.....	.....	.....	23	53
University of Georgia, College of Med..	13	12	18	37	80
Bennett Medical College, Chicago.....	111	91	98	95	395
Chicago College of Med. and Surg.....	163	117	121	241	642
Hahnemann Med. Coll. and Hosp.—H..	15	15	12	34	76
Hering Medical College, Chicago.—H....	9	4	4	22	39
Jenner Medical College, Chicago.....	111	42	20	18	191
Northwestern Univ. Med. Sch., Chicago.	36	34	68	58	196
Rush Medical College, Chicago.....	109	110	93	110	422
University of Illinois, College of Med...	158	119	114	144	535
Indiana University, School of Medicine..	41	35	23	47	146
Drake Univ., College of Medicine.....	13	3	5	24	45
State University of Iowa, College of Medicine, Iowa City.....	35	30	16	17	98
State University of Iowa, College of Homeo. Med., Iowa City.—H.....	3	4	.....	6	13
Kansas Medical College, Tokepa.....	5	4	2	22	33
University of Kansas, School of Med...	31	17	11	7	66
Univ. of Louisville, Med. Dept.	57	68	51	79	255
Tulane University, School of Medicine..	70	65	70	91	296
Medical School of Maine, Portland.....	15	26	21	13	75
Baltimore Medical College, Baltimore..	46	58	35	37	176
College of P. and S., Baltimore.....	42	67	49	76	234
Johns Hopkins University, Med. Dept..	80	93	91	78	351
Maryland Medical College, Baltimore...	37	17	17	46	117
Univ. of Maryland, School of Med.....	67	67	93	66	293
Boston Univ., School of Med.—H.....	42	21	22	13	98
College of P. and S., Boston*.....	20	20	21	19	80
Harvard Medical School.....	68	82	74	61	285
Tufts College, Med. School, Boston....	100	84	38	95	317
Detroit Coll. of Medicine, Detroit.....	69	43	54	31	197
University of Michigan, Department of Med. and Surg., Ann Arbor.....	84	51	49	37	221
University of Michigan, Homeopathic College, Ann Arbor.....	9	18	19	17	63
Univ. of Minnesota, Medical School....	50	47	33	46	176
Univ. of Miss., Med. Dept., Oxford.....	18	20	.....	.....	38
Univ. of Mo., Med. Dept., Columbia....	27	18	.....	.....	45
Kansas City Hahn. Med. C...—H*.....	.....	.....	.....	8	55
University Med. College, Kansas City...	.....	.....	8	50	58
Eclectic Med. Univ., Kansas City*.....	.....	.....	.....	13	42
Ensworth Medical College, St. Joseph..	.....	.....	13	7	20
American Medical College, St. Louis.....	79	46	37	49	211
St. Louis Univ., School of Medicine....	58	54	46	75	233
St. Louis College of P. and S.....	.....	.....	.....	19	60
Washington Univ., Med. Dept., St. Louis	9	15	18	28	66
Creighton Medical College, Omaha.....	56	43	34	44	182
Univ. of Nebraska, Coll. of Med.....	33	23	13	9	78
Cotner Medical College.—E.....	14	8	5	8	35
Dartmouth Medical School, Hanover....	9	2	6	10	27
Albany Medical College, Albany.....	78	62	48	51	239
Columbia Univ., College of P. and S..	89	70	76	104	339
Cornell Univ. Med. Coll., New York City	39	24	20	19	102
Fordham Univ., School of Medicine.....	37	37	32	30	136
Long Island Coll. Hosp., New York City	126	116	116	80	438
New York Homeopathic Medical College and Hospital.—H.....	85	60	42	58	245
New York Medical College and Hospital for Women.—H.....	19	10	7	9	45
University and Bellevue Hospital Medical College, New York.....	54	132	87	79	352
Syracuse University, College of Med....	32	19	13	23	87
Univ. of Buffalo, Med. Dept., Buffalo..	60	65	51	45	221
Leonard Medical School, Raleigh.....	24	25	25	23	97
Univ. of North Carolina, Med. Coll....	28	26	.....	.....	54
North Carolina Med. Coll., Charlotte...	13	20	23	29	85
Wake Forest School of Medicine.....	14	16	.....	.....	30
Univ. of North Dakota, Medical Dept...	8	6	.....	.....	14
Cleveland-Pulte Medical College.....	.....	.....	.....	23	85
Western Reserve University, School of Medicine, Cleveland	53	39	28	41	161
Eclectic Med. Coll., Cincinnati.—E.....	19	21	20	29	89
Ohio-Miami Medical College of the University of Cincinnati.....	18	19	17	26	80
Starling-Ohio Med. Coll., Columbus...	64	55	58	54	231
Toledo Medical College, Toledo.....	16	6	6	4	32
University of Oklahoma, School of Med., Norman and Oklahoma City..	13	7	3	9	32
Univ. of Oregon, Med. Dept., Portland.	18	11	9	19	57
Willamette Univ., Med. Dept., Salem....	8	13	18	10	49
Hahnemann Med. Coll. and Hosp., Phila.	25	20	16	31	92
Jefferson Medical College, Philadelphia.	213	163	109	135	680
Medico-Chirurgical Coll. of Philadelphia	79	79	83	73	314
Temple Univ., Med. Dept., Philadelphia.	17	17	16	19	69
University of Penn., Dept. of Med.....	71	58	76	102	307
Woman's Medical College of Penn.....	20	29	19	25	93
University of Pittsburgh, Med. Dept....	38	15	49	43	145
Medical College of South Carolina.....	34	27	22	35	118
Univ. of South Dakota, Coll. of Med....	9	4	.....	.....	13
Lincoln Memorial University Medical Department, Knoxville	34	24	17	23	98
Meharry Medical College, Nashville.....	70	81	77	94	322
Vanderbilt Univ., Med. Dept., Nashville	108	107	78	72	365
Univ. of Tenn., Coll. of Med.....	30	24	21	37	112
Memphis Hosp. Med. Coll.., Memphis...	60	69	55	87	271
Univ. of West Tenn., Medical Dept.....	10	12	8	15	45
Fort Worth School of Medicine.....	10	16	17	17	60
Univ. of Texas, Med. Dept., Galveston..	56	31	23	43	153
Baylor Univ., Coll. of Med., Dallas.....	9	17	21	24	71
Southern Methodist Univ., Med. Dept....	23	11	16	15	65
University of Utah, School of Medicine.	11	12	.....	.....	23
University of Vermont, College of Med.	12	47	38	43	140
Medical College of Virginia, Richmond..	62	61	61	56	240
Univ. College of Medicine, Richmond...	60	42	34	40	176
University of Virginia, Dept. of Med....	34	22	21	14	91
West Virginia Univ., School of Med.....	5	3	.....	.....	8
Marquette University School of Med....	67	72	60	84	283
Univ. of Wisconsin, Coll. of Med.....	33	33	.....	.....	66
Totals	4564	4093	3639	4444	17015

Note.—This table gives for each college, from which the information was obtainable, the number of students enrolled in each of the four classes. The colleges marked with an asterisk (*) either do not publish classified lists of their students in their announcements, or otherwise the information was not obtained. For these colleges the figures given in the fourth-year column show the number graduated. The College of Physicians and Surgeons of Boston reported a list of 181 "matriculants and applicants" which also included dental students. On fairly reliable information it is estimated that about 80 medical students were actually enrolled, or about 20 in each class. Nine colleges gave only the work of the first two years and two colleges, the University Medical College of Kansas City and the Ensworth Medical College, St. Joseph, Mo., gave only the work of the clinical years.

This table is very interesting in the light of the rapid trend toward higher entrance requirements. This table should be studied in connection with the lists of colleges on page 587 which have adopted higher entrance requirements. In every instance where the first year class shows a marked increase the medical college is one which has continued to hold to a four-year high school, or lower, entrance requirement, in face of the sweeping and voluntary movement by medical colleges generally toward the requirement of one or more years of liberal arts' college work for admission. The colleges having the most noticeable increases, given in the order they appear in the list, are the Bennett Medical College, Chicago; the Chicago College of Medicine and Surgery; Jenner Medical College, Chicago; University of Illinois College of Medicine; Tufts College Medical School, Boston; American Medical College, St. Louis; Long Island College Hospital, Brooklyn, and Jefferson Medical College, Philadelphia. On the other hand by examining this table the reader can pick out colleges which began last fall to enforce higher entrance standards. The Atlanta College of Physicians and Surgeons began a more rigid enforcement of the fourteen unit high school standard. Six colleges which began the requirement of one year of collegiate work are Howard University School of Medicine, Washington; Medical School of Maine, Portland; University of Michigan Homeopathic College, Ann Arbor; University and Bellevue Hospital Medical College, New York City; Baylor University College of Medicine, Dallas, and the University of Vermont, College of Medicine, Burlington. Two colleges which began the requirements of two years of college work, are Georgetown University School of Medicine, Washington, D. C., and Washington University School of Medicine, St. Louis. In this connection it is interesting to note on page 587 that thirteen state medical licensing boards have adopted higher standards of preliminary education, and that seven of them, Colorado, Indiana, Iowa, Kentucky, Minnesota, North Dakota and South Dakota, require as a minimum two years of collegiate work.

The five colleges having the largest enrollment are Jefferson Medical College, 680; Chicago College of Medicine and Surgery, 642; University of Illinois, College of Medicine, 535; Long Island College Hospital, 438, and Rush Medical College, 422.

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SATURDAY, AUGUST 23, 1913

MEDICAL EDUCATION IN THE UNITED STATES

The tabulated statistics herewith presented (pages 569 to 598) are for the year ending June 30, 1913, and are based on signed reports received directly from the medical colleges or from other reliable sources. We take much pleasure in acknowledging here the courtesy and cooperation of the various officials of the medical colleges which have made the compilation of these complete statistics possible.

STATISTICS OF COLLEGES

Table 1 (pages 590 to 592) gives the colleges in session during 1912-13; the population of the city in which each college is located; the rating given to the college in the third classification of the Council on Medical Education; the number of students, men and women, registered during the year; the number of 1913 graduates, men and women; the number of graduates holding collegiate degrees; the number of teachers for each college; the number of weeks of actual work in the college year; the total fees for each year; the executive officer of the college and the dates of beginning and ending of the next session. The figures in heavy-faced type show the totals by states. Beginning on page 569 are given essential facts concerning all medical colleges, arranged by states.

NUMBER OF MEDICAL STUDENTS

The total number of medical students (matriculants) in the United States for the year ending June 30, 1913, excluding special students, was 17,015, a decrease of 2,771 below 1911, a decrease of 4,511 below 1910 and a decrease of 11,127 below 1904, when the highest number of students was enrolled. In fact, it is the lowest number since THE JOURNAL began compiling these statistics in 1900. Of the total number of students, 15,909 were in attendance at the so-called regular colleges, 850 at the homeopathic, and 256 at the eclectic colleges. The attendance at the regular colleges shows a decrease of 1,368 below that of last year and 2,505 below 1911. In the homeopathic colleges there was an increase of twenty-three above the attendance of 1912, but a decrease of forty below the total for 1911. The eclectic colleges show a decrease of fifty-two below 1912 and a decrease of 177 below 1911.

TABLE 4.—MEDICAL COLLEGE ATTENDANCE

Year.	Regular.	Homeopathic.	Eclectic.	Physio-Med.	Nondescript.	Total.
1880	9,776	1,220	830	...	...	11,826
1890	13,521	1,164	719	...	...	15,404
1900	22,710	1,909	522	...	...	25,171
1901	23,846	1,683	664	80	144	26,417
1902	24,878	1,617	765	91	150	27,501
1903	24,939	1,498	848	149	190	27,615
1904	23,662	1,309	1,014	123	234	28,142
1905	24,119	1,104	578	114	232	26,147
1906	23,116	1,085	644	110	249	25,204
1907	22,303	1,039	545	97	292	24,276
1908	20,936	891	479	90	206	22,602
1909	20,554	899	413	52	227	22,145
1910	20,136	867	455	49	19	21,526
1911	18,414	890	433	49	...	19,786
1912	17,277	827	308	...	...	18,412
1913	15,919	850	256	...	...	17,015

NUMBER OF MEDICAL GRADUATES

The total number of graduates for the year ending June 30, 1913, was 3,981, a decrease of 502 below 1912, a decrease of 292 below 1911, and a decrease of 459 below 1910. The total this year is 1,766 less than in 1904, when the largest number were graduated. The percentage of graduates to matriculants was 23.4 this year, as compared with 24.7 in 1912 and 21.6 in 1911.

TABLE 5.—MEDICAL COLLEGE GRADUATES

Year.	Regular.	Homeopathic.	Eclectic.	Physio-Med.	Nondescript	Total.
1880	2,673	380	188	..	..	3,241
1890	3,853	380	221	..	..	4,454
1900	4,715	413	86	..	..	5,214
1901	4,879	387	148	18	12	5,444
1902	4,508	336	138	16	11	5,009
1903	5,088	420	149	24	17	5,698
1904	5,190	371	146	20	20	5,747
1905	5,126	276	153	22	23	5,600
1906	4,841	286	186	22	29	5,364
1907	4,591	225	121	11	32	4,980
1908	4,370	215	116	12	28	4,741
1909	4,163	209	84	15	44	4,515
1910	4,113	183	114	16	14	4,440
1911	4,006	152	110	5	..	4,273
1912	4,206	185	92	..	..	4,483
1913	3,679	209	93	..	..	3,981

The number of graduates from the regular colleges was 3,679, or 527 less than last year, 327 less than in 1911 and 434 less than in 1910. From the homeopathic colleges there were 209 graduates, or twenty-four more than in 1912, fifty-seven more than in 1911 and the same number as in 1909. The eclectic colleges graduated ninety-three, or one more than last year, but seventeen less than in 1911 and twenty-one less than in 1910. Of the 3,981 medical graduates, 753, or 18.9 per cent., were reported to hold also degrees in arts or science, as compared with 17 per cent. last year, 16.5 per cent. in 1911 and 15.3 per cent. in 1910. Of the 3,679 regular school graduates, 732, or about 20 per cent., were reported to have baccalaureate degrees, while of the homeopathic graduates, twenty, or 9.5 per cent., were so reported, and of the eclectic graduates only one (less than 1 per cent.) was reported as holding a degree from a college of liberal arts. As will be noted by referring to Table 12, of the 753 graduates holding baccalaureate degrees, 139—the largest number—came from Illinois colleges, followed by 99 from New York,

50 from Maryland, 73 from Pennsylvania and 60 from Massachusetts. It is expected that in future the percentage of graduates holding collegiate degrees will increase, since a larger number of medical schools are requiring college work for admission.

WOMEN IN MEDICINE

During the past year there were 640 women studying medicine, or thirty-nine less than last year, a decrease of forty below 1911 and a decrease of 367 below 1910. The percentage of all medical students was 3.8, as compared with 3.2 last year. There were 154 women graduates this year, or 3.8 per cent. of all graduates. There has been a very marked decrease in the number of women in medicine since 1910, when there were 907 women students and 157 graduates, and in 1909, when there were 921 women students and 162 graduates. Of all the women matriculants, 138 (21.6 per cent.) were in

TABLE 6.—WOMEN IN MEDICINE

Year.	Total women students.	Percentage of all students, both sexes.	Total women graduates.	Percentage of graduates, both sexes.	Women's colleges.	Students.	Percentage of all women students	Graduates.	Percentage of all women graduates.	Co-ed. schools.	Students.	Percentage of all women graduates.	Graduates.	Percentage of all women graduates.
1904	1,129	4.3	244	4.0	3	183	16.2	56	23.0	97	946	83.8	198	77.0
1905	1,073	4.1	219	4.0	3	221	20.6	54	24.5	96	852	79.4	165	75.5
1906	895	3.5	233	4.3	3	189	21.0	33	14.1	90	706	79.0	200	85.9
1907	928	3.8	211	4.2	3	210	22.6	39	18.5	86	718	77.4	172	81.5
1908	835	3.7	185	3.9	3	186	22.3	46	24.9	88	649	77.7	139	75.1
1909	921	4.2	162	3.7	3	169	18.4	33	20.3	91	752	81.6	129	79.7
1910	907	4.2	157	3.5	3	155	17.1	41	26.1	82	752	82.9	116	73.9
1911	680	3.4	159	3.7	2	134	19.7	36	22.6	74	546	80.3	123	77.4
1912	679	3.2	142	3.2	2	143	21.1	32	22.5	64	536	78.9	110	77.5
1913	640	3.8	154	3.8	2	138	21.6	33	21.4	55	502	78.6	121	78.6

attendance at the two medical colleges for women, as compared with 143 (21.1 per cent.) in 1912, 134 (19.7 per cent.) in 1911 and 155 (17.1 per cent.) in 1910. The remaining 502 (78.4 per cent.) were matriculated in the fifty-five coeducational colleges. From the two women's colleges, there were thirty-three, or 21.4 per cent., of all women graduates, while 121, or 78.6 per cent., secured their degrees from coeducational colleges.

NUMBER OF COLLEGES

Heretofore no exact data were available on which absolute statements could be made regarding the number of medical schools existing in any certain year. The Council on Medical Education has succeeded in collecting reliable data regarding all medical schools from which it was possible to construct the chart appearing on pages 578 to 581 of this issue. By means of this chart the actual number of schools existing in any one year can be positively stated, where heretofore only estimates were possible. Table 7, therefore, allowing of comparisons between the number of colleges existing in recent years, has been revised in accordance with this life chart.

Since June 30, 1912, fourteen colleges (mentioned on page 596) have either suspended or have merged with others, and two new colleges have been organized, leaving 106 medical colleges still existing. The number of colleges is the smallest number since 1880. It was about that time that the movement toward establishing medical colleges for profit became most marked, and the rapid increase in the number of colleges has been paralleled only by the rapid decrease since 1904. There has been a net decrease of fifty-six colleges since 1906, when there were 162 colleges. Seventy-nine colleges have been closed

TABLE 7.—MEDICAL COLLEGES
Revised according to Life Chart, p. 578

Year.	Regular.	Homeopathic.	Eclectic.	Physio-Med.	Nondescript.	Total.
1850.....	44	3	4	1	..	52
1860.....	53	6	4	2	..	65
1870.....	60	8	5	2	..	75
1880.....	76	14	8	2	..	100
1890.....	106	16	9	2	..	133
1900.....	126	22	9	2	1	160
1901.....	125	22	10	2	1	160
1902.....	126	20	9	3	2	160
1903.....	126	20	9	3	2	160
1904.....	127	19	9	3	2	160
1905.....	125	19	9	3	2	158
1906.....	130	19	8	3	2	162
1907.....	127	18	9	3	2	159
1908.....	120	18	9	2	2	151
1909.....	115	15	8	1	1	140
1910.....	109	12	8	1	1	131
1911.....	103	12	7	..	..	122
1912.....	101	11	6	..	..	118
1913.....	91	10	5	..	..	106

by merger or otherwise since 1904, but in the same time twenty-three new colleges were organized, leaving 106 medical colleges which still exist. The regular colleges number ninety-one, a decrease of ten since last year. The homeopathic colleges number ten, a decrease of one since last year and the eclectic colleges number five, a decrease of one since last year.

FEWER BUT BETTER COLLEGES

Of the seventy-nine medical colleges which have ceased to exist since 1904, forty-seven were closed by merger and thirty-two became extinct. It is noteworthy that

TABLE 8.—COLLEGES CLOSED SINCE 1904

Year.	Class A.*		Class B.		Class C.		Totals		Total Closed
	Mgd.	Ext.	Mgd.	Ext.	Mgd.	Ext.	Mgd.	Ext.	
1905.....	8	1	..	..	..	..	8	1	9
1906.....	..	..	..	..	..	..	..	..	..
1907.....	3	..	3	1	..	3	6	4	10
1908.....	2	..	2	..	1	4	5	4	9
1909.....	3	..	2	..	..	7	5	7	12
1910.....	1	..	3	..	3	6	7	6	13
1911.....	..	..	3	..	1	3	4	3	7
1912.....	2	..	..	..	..	3	2	3	5
1913.....	3	..	6	1	1	3	10	4	14
Totals..	22	1	19	2	6	29	47	32	79

* Based on the classifications of medical colleges prepared by the Council on Medical Education.

this rapid diminution in the number of colleges began following the creation of the Council on Medical Education in 1905, and became more marked following the Council's first classification of medical colleges issued in

1907. The largest numbers closing in single years were thirteen in 1910, when the Council's second classification was published, and fourteen last year, when the third classification was made public.

It is interesting to note also that most of the closures of medical schools in Classes A and B were by merger, whereas all but three of the medical schools which became extinct had been rated in Class C.

While the total number of colleges is growing smaller, however, and approaching more nearly the normal supply for this country, it is encouraging to note that the number of high-grade, stronger medical colleges is constantly increasing. In 1904 only four medical colleges were requiring any preliminary education in advance of the usual high-school education; now there are fifty-three[1] requiring one or more years of advance college work and twenty-eight others which begin the higher requirement next year. The colleges have been remarkably improved also in regard to buildings, new laboratories, better equipment, larger hospital facilities and—most important—more and better full-time, salaried instructors.

FURTHER MERGERS NEEDED

Only nineteen cities still exist which have two or more medical schools, and in eight of these mergers are scarcely possible, owing to the fact that the schools differ as to sect or race, leaving eleven cities where mergers are still possible. These cities and the number of colleges in each between which mergers are possible, are as follows: Chicago, 6; New York, 5; Baltimore, 4; St. Louis, 4; Boston, 3; San Francisco, 3; Los Angeles, 2; Washington, 2; Dallas, 2, and Omaha, 2. In 1904 there were twenty-four cities having each from two to eight regular medical schools. More mergers should be brought about.

TABLE 9.—CITIES HAVING TWO OR MORE MEDICAL COLLEGES

City	A+	A	B	C	Total
Chicago	2	1	3	1	7
New York	3	1	2	1	7
Philadelphia	1	4	1	..	6
Baltimore	1	2	..	1	4
Boston	1	2	..	1	4
San Francisco	2	..	1	1	4
St. Louis	1	1	..	2	4
Atlanta	..	..	1	2	3
Washington	..	2*	..	..	2*
Los Angeles	½	..	1	1	2½
Ann Arbor	1	1	..	..	2
Cincinnati	1	..	1	..	2
Cleveland	1	..	..	1	2
Dallas	..	..	1	1	2
Iowa City	1	1	..	..	2
Kansas City	..	..	..	2	2
Memphis	..	..	1	1*	2*
Nashville	..	2*	..	..	2*
Omaha	..	1	1	..	2

* One school for the colored race.

The most famous medical centers in Europe—for example, Berlin, Paris, Vienna—have but one large medical school each, which makes systematic use of all the clinical facilities of its respective city. There is no valid reason why this country should not have equally famous medical centers, but the highest development is prevented by the existence of two or more competing medical schools. For the further improvement not only of undergraduate but also of postgraduate medical instruction in this country, there should be other mergers in the eleven cities named.

LENGTH OF TERMS

The length of term of each college fluctuates somewhat from year to year, but on the whole, during the last twelve years there has been a decided lengthening of college terms. This has reference to the weeks of actual work exclusive of holidays. Only three colleges this year reported sessions shorter than twenty-nine weeks, whereas in 1901, one hundred colleges reported sessions of from twenty-three to twenty-eight weeks. Five colleges claim courses of twenty-nine or thirty weeks of actual work, twenty-nine claim courses of thirty-one or thirty-two weeks, and forty-one, the largest number, claim courses of from thirty-three to thirty-four weeks. Of the 106 colleges now existing, ninety-seven, or 91.5 per cent., now claim to require from thirty-one to thirty-six weeks of actual work, exclusive of holidays, as compared with 85 per cent. in 1912, 76 per cent. in 1910, 42 per cent. in 1904 and only 30 per cent in 1901. The one college claiming a course longer than thirty-six weeks is a night school, but it would require twelve or fourteen years of the usual night-school study, however, to obtain the equivalent of four years of thirty-two weeks each in one of the better day colleges.

TABLE 10.—COLLEGE TERMS

Year.	23 to 26 weeks.		27 to 28 weeks.		29 to 30 weeks.		31 to 32 weeks.		33 to 34 weeks.		35 to 36 weeks.		Over 36 weeks.	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No	%
1901	58	36.5	42	26.4	8	5.0	26	16.4	4	2.5	18	11.3	3	1.9
1902	44	28.4	44	28.4	11	7.1	33	21.3	3	1.9	18	11.6	2	1.3
1903	33	21.4	46	29.9	15	9.7	37	24.0	2	1.3	19	12.4	2	1.3
1904	27	16.3	44	26.5	22	13.3	37	22.3	13	7.8	20	12.0	3	1.8
1905	15	9.4	35	21.8	12	7.5	44	27.5	13	8.1	38	23.8	3	1.9
1906	14	8.7	35	21.7	26	16.1	32	19.9	24	14.9	28	17.4	2	1.3
1907	6	3.7	27	16.8	26	16.1	42	26.1	29	18.0	29	18.0	2	1.3
1908	2	1.3	21	13.8	28	18.4	51	33.6	24	15.8	22	14.5	4	2.6
1909	4	2.3	17	11.6	23	16.4	51	34.9	18	12.3	30	20.5	3	2.0
1910	2	1.5	8	6.0	19	14.3	42	31.5	30	22.6	30	22.6	2	1.5
1911	..	....	6	5.0	16	13.3	37	30.8	32	26.7	28	23.4	1	0.8
1912	1	0.9	1	0.9	11	9.5	34	29.3	37	31.8	31	26.7	1	0.9
1913	..	....	3	2.8	5	4.7	29	27.4	41	38.7	27	25.5	1	0.9

TUITION AND OTHER FEES

Special attention is called in Table 1 to the total amount charged by the various colleges for tuition, matriculation, laboratory and graduation fees per annum for each student. In Table 11 the 106 remaining colleges have been grouped according to the amount of fees charged and according to their classification by the Council on Medical Education in Classes A, B and C. Twenty-three colleges charge fees of $100 or less per year, sixty-five between $100 and $175, and eighteen charge above $175. Of the twenty-three colleges charging $100 or less, twelve, or over half, were listed among Class A (acceptable) colleges[2] by the Council on Medi-

1. See list on page 587.

2. See list on page 585.

cal Education, five were among Class B colleges, and only six of them are found among the Class C colleges. Among the ten Class A colleges having these low fees are the schools of medicine of the state universities of Colorado, Iowa, Mississippi, Missouri, North Dakota, South Dakota, Texas and Utah. On the other hand sixteen colleges listed by the Council in Class C charge fees of from $100 to $175 per year for each student. As shown on page 587 diplomas from Class C colleges are reported as not recognized by twenty-four state licensing

TABLE 11.—COLLEGE FEES

Total Fees.	Number of Colleges			
	Class A*	Class B.	Class C.	Total.
$ 50 or less	2	1	..	3
50 to $ 75	8	..	3	11
75 to 100	2	4	3	9
100 to 125	6	4	11	21
125 to 150	12	7	3	22
150 to 175	18	2	2	22
175 to 200	10	2	..	12
200 or above	5	1	..	6
Totals	63	21	22	106

*Based on the latest classification of medical colleges prepared by the Council on Medical Education.

boards. It is a question, therefore, why a student should spend his time and money in a low-grade college the diplomas of which are not recognized in many states, when in the same time and with even less money he can attend one of the best equipped colleges the diplomas of which are recognized in all states? Although fifty colleges listed in Class A charge fees ranging from $150 to $275 per year for each student, the actual expense for teaching that student in these colleges amounts to from two, or three to several times those sums.

COLLEGES, STUDENTS AND GRADUATES BY STATES

Illinois has heretofore had the largest number of medical colleges, but now the first place is held by New York, where there are ten colleges. Missouri and California each have eight and Illinois and Pennsylvania each have seven colleges. Illinois still has the largest number of students enrolled, having 2,496 matriculants last session, followed by New York with 2,204, Pennsylvania with 1,700, Tennessee with 1,213 and Maryland with 1,171. In regard to the graduates the same relative position obtains.

Table 13 shows the colleges existing last session and their students and graduates grouped according to their rank in the third classification of the Council on Medical Education. As will be noted, there were sixty-eight colleges in Classes A+ and A and 25 each in Classes B and C. It is encouraging to note that over 65 per cent. of all students are enrolled in the 56 per cent. of colleges which are in Class A+ and A and that these colleges turn out over 63 per cent. of all graduates. At the other extreme only 10.2 per cent. of all students and 9.8 per cent. of all graduates are from the 21.2 per cent. of colleges rated in Class C.

TABLE 12.—COLLEGES, STUDENTS AND GRADUATES, BY STATES

State.	Medical Schools	Students.		Graduates.		Graduates with B.S. or A.B.
		Men.	Women.	Men.	Women.	
Alabama	2	217	...	49	...	6
Arkansas	1	109	1	32	...	2
California	8	389	52	68	4	16
Colorado	1	84	6	46	4	12
Connecticut	1	42	...	9	...	6
Dist. of Col.	3	348	3	59	2	6
Georgia	4	755	8	204	1	7
Illinois	7	2,356	140	552	43	139
Indiana	1	139	7	46	1	16
Iowa	2	148	8	41	5	5
Kansas	1	94	5	28	1	6
Kentucky	1	225	...	77	...	...
Louisiana	1	296	...	79	...	23
Maine	1	75	...	13	...	4
Maryland	3	1,133	38	240	6	80
Massachusetts	4	730	50	166	9	60
Michigan	3	461	20	80	3	32
Minnesota	1	166	10	41	4	35
Mississippi	1	28	...	...	...	...
Missouri	8	764	26	220	6	7
Nebraska	3	279	16	50	6	10
New Hampshire	1	27	...	10	...	3
New York	10	2,133	71	446	14	99
North Carolina	4	265	1	47	1	8
North Dakota	1	11	3	...	...	...
Ohio	6	654	24	174	7	39
Oklahoma	1	28	4	8	1	1
Oregon	1	98	6	28	1	5
Pennsylvania	7	1,596	104	377	25	73
South Carolina	1	118	...	30	...	4
South Dakota	1	13	...	...	...	...
Tennessee	5	1,205	8	314	1	18
Texas	4	331	19	84	6	9
Utah	1	21	2	...	...	...
Vermont	1	140	...	37	...	...
Virginia	2	507	...	97	...	14
West Virginia	1	8	...	...	...	...
Wisconsin	2	339	10	75	8	8
Totals	106	16,372	643	3,827	154	753

TABLE 13.—STATISTICS ACCORDING TO COLLEGE CLASSIFICATION

	Colleges*		Students		Graduates	
	No.	Per Cent.	Number	Per. Cent.	Number	Per Cent.
Class A+	25	21.2	4,229	24.9	992	24.9
Class A	43	36.4	6,893	40.5	1,547	38.9
Class B	25	21.2	4,158	24.4	1,050	26.4
Class C	25	21.2	1,735	10.2	392	9.8
	118	100.0	17,015	100.0	3,981	100.0

* Includes 12 colleges which will hold no more sessions.

HOME STATES OF MEDICAL STUDENTS

Table 2, on pages 594 to 597, shows from what states the students come who were in attendance at each medical college during the session of 1912-13. The influence of the proximity of the medical school is seen in the fact that states having medical colleges contribute more students in proportion to the population than those which have no colleges. This is shown by the dark zone of figures running diagonally down the page. A comparison of this table with the large tables based in state board examinations,[3] which show the distribution of the alumni of each college, is interesting. The college which has widely distributed alumni usually has a student body from an equally large number of states.

The state furnishing the largest number of students this year was New York, with 2,098. Pennsylvania contributed 1,375 and Illinois 1,314. The next states, in the order of the number of students contributed are: Ohio, 795; Massachusetts, 680; Texas, 594; Missouri,

3. THE JOURNAL A. M. A., May 24, 1913, p. 1624.

562, and Tennessee, 436. Four states had less than twenty each, these being Arizona fourteen; Wyoming, ten; New Mexico, eight, and Nevada, four. There were eighty-nine students from Hawaii, Porto Rico and the Philippine Islands, and 562 students from foreign countries.

STUDENTS ENROLLED BY CLASSES

In Table 3, on page 598, the students enrolled in each college are shown by classes. This permits one to see whether the attendance at each college is increasing or decreasing. The total attendance for the first year in all colleges is larger than that of the second year by 471. More interesting, however, is the study of this table in the light of higher entrance requirements which have been adopted during the last two or three years by a large number of colleges.[4] The effects of these higher requirements are shown in the figures in two ways: smaller enrollments for the colleges which have adopted the higher requirements and larger enrollments for the colleges which have retained the lower requirements. The benefit in larger classes for the "stand-pat" colleges can be only temporary, however, so decided is the trend for the higher standards. Already thirteen state licensing boards have gone on record for the higher requirements and others are contemplating similar action. The House of Delegates of the American Medical Association in June, 1912, adopted a report instructing the Council on Medical Education to omit from the acceptable list any medical college which after Jan. 1, 1914, does not require for admission in addition to the four-year high-school education, at least one year of higher preliminary work, including courses of college grade in physics, chemistry and biology. The Association of American Medical Colleges has adopted a similar requirement. The medical profession in the United States, therefore, has gone on record for entrance qualifications which bring medical education in this country more nearly on a par with the requirements of other countries.

The next great wave of improvement, and which has already begun, is the establishing of closer relationships between hospitals and medical schools, whereby each of the hospitals will have on its attending staff the most skilled physicians who are engaged in teaching and research, and the medical school will possess a teaching hospital where students may see and study patients at the bedside. This closer relationship is a direct acknowledgment on the part of the hospital that the medical school has improved to such an extent that it is a real honor and a benefit to have a closer relationship with it. This closer relationship undoubtedly means that the hospitals will be conducted along more modern lines; it means that medical students will be given a better training in the examination and care of patients and, last but not least, it means that the public will in future be supplied with better qualified physicians.

4. See lists on page 587.

HASTY GENERALIZATION IN THERAPY

The search for "specifics" for the various ailments that beset mankind has become so keen in recent years, partly because of the striking success in a few familiar instances, and the competition among drug manufacturers to meet these obvious wants has become so brisk, that there is at present an overshadowing danger from a sort of reckless medication which may in the end react unfavorably on the advance of chemotherapy. A few experiments are carried out on animals, often without adequate controls; the observer is inspired with a possibility of the therapeutic application of his hasty findings; the clinic and the patient are drawn into requisition; the healing propaganda is launched; the manufacturer helps it on its way; and not infrequently the nostrum vender reaps an unsuspected harvest in the new land of promised health. Then comes the awakening. The premises are found to be wrong, the experimental evidence inadequate, the clinical observations conflicting or uncertain, and the vaunted cures are dispelled.

We are impelled to illustrate this by reference to a recent instance. There are comparatively few well-founded examples of any profound changes in the chemical composition of the fundamental tissues incident to disease. Many of the perversions of physiologic behavior are functional rather than organic in character. It has long been believed that some of the diseases of the central nervous system, particularly those in which anatomic lesions or alterations are known to occur, are attended by changes in the chemical make-up of the tissue. Owing to the technical difficulties in the analysis of nervous matter, the proof has not easily been furnished. Not long ago Carbone and Pighini[1] asserted that in the brain of individuals dying of progressive paralysis the proportion of one of the brain phosphatids, cephalin, is markedly reduced. This announcement promptly awakened the hope of a corresponding therapy of nervous disease.

Several years ago Franchini[2] attempted to "enrich" tissues in lecithin by the administration of lecithin. He employed the product prepared from egg-yolk and believed that he could actually demonstrate a deposition of this lipoid in the liver. In the case of the brain, however, no evidence of any increase in phosphatids could be discovered as the result of furnishing egg lecithin to the body. Fränkel contends that the human brain does not contain the ordinary lecithin, but a phosphatid of different type—a triaminodiphosphatid which he has named "sahidin." In view of the differences in the results of experimental feeding suggested by the specific peculiarities of the species, Salkowski,[3] the well-known pathologic chemist of Berlin, has been impelled to repeat the experiments on phosphatid administration, using the closely related cephalin in place of lecithin.

1. Carbone and Pighini: Biochem. Ztschr., 1912, xlvi, 451.
2. Franchini. Biochem. Ztschr., 1907, vi, 211.
3. Salkowski, E.: Ist es möglich, den Gehalt des Gehirns an Phosphatiden zu steigern? Biochem. Ztschr., 1913, li, 407.

The outcome of his trials with animals has been that cephalin—already an article of commerce—is well tolerated and apparently readily absorbed. In contrast with what Franchini reported for lecithin, cephalin was not deposited in the liver, but was said to become stored in the brain. When one examines Salkowski's data critically, however, they bring little conviction. The actual increment of phosphatid found by him—and that in only a very limited number of experiments—is so small as almost to fall within the limits of experimental error in such kinds of investigation. Salkowski argues that in a tissue which resists alterations in its chemical make-up as stubbornly as does the brain, the increment of even 5 per cent. of any component—the figure recorded for his cephalin trials—is noteworthy. He therefore regards it as probable that cephalin can be introduced into the nervous tissue in this way and suggests that his experiments justify the attempt to employ the otherwise harmless cephalin in progressive paralysis and other cerebral affections.

Despite Salkowski's apologies for the limited number of experiments on which he has based his conclusions, one can already foretell the probable outcome of such a recommendation by a well-known medical investigator. Lecithin- and cephalin-therapy will receive an impetus as yet quite unwarranted by the facts at hand. Skilful advertising will do even more. It is not that we object to the therapeutic trial of promising procedures or chemical compounds, for that is the way in which progress is initiated. But in these days of abundant facility for research one may reasonably expect that the purely empirical mode of clinical investigation will be supplemented, if not replaced, by a scheme of observation based on encouraging evidence when such is procurable. It is, of course, true that exact science grows slowly and that painstaking preliminary experiments are laborious and costly. Yet it is precisely the unsatisfactory outcome of haphazard trials, the unfortunate exploitation of inadequately controlled panaceas, the failure of ill-timed and unwarranted medication, that have perhaps done more than anything else to cast an undeserved stigma on the utility of much modern therapeutic research. In the interest of this legitimate and important field of medical investigation, productive of helpful results when conducted on a rationa. basis, this protest against overhasty generalizations from "preliminary" investigations is made.

COMPARISON OF POLYNEURITIS OF FOWLS WITH HUMAN BERIBERI

It would seem that there can be no doubt that beriberi in man is the result of a too nearly exclusive diet of polished rice, or of other foods lacking in what we may for the present, term a neuritis-preventing substance; such at least are the conclusions justified by the extensive studies of Fraser and Stanton[1] and of Strong and Crowell.[2] It has likewise been proved that polyneuritis of fowls—so-called polyneuritis gallinarum—can be induced by a similar diet. The cause of the two diseases is therefore the same, and abundantly justifies the use of the experimental animal in the search for curative or preventive measures to be applied to the human situation.

In this way we have learned that both meat and potatoes contain a certain, but relatively small, amount of the neuritis-preventing substance; and the immunity from beriberi of those races whose main articles of diet are meat and potato is explained. We have learned, further, that ordinary white bread is quite lacking in antineuritic substance; and thereby light is thrown on the appearance of beriberi on Norwegian sailing ships about 1894, when wheat bread was substituted for rye bread in the dietary. A similar result was reported by Little[3] in respect to the native population of Labrador and Newfoundland which lives almost exclusively on white wheat flour at certain seasons. By experimental methods it has further been shown that probably most leguminous seeds—peas, beans, peanuts, etc.—will be efficacious as an antineuritic adjuvant to restricted dietaries of bread or rice.

Despite the useful comparisons which have been made and the analogies discovered, it now appears from the investigations of the U. S. Army Board for the Study of Tropical Diseases as They Exist in the Philippine Islands[4] that the symptomatology and pathology of polyneuritis gallinarum cannot be regarded as identical with that of beriberi in man. As the Manila investigators, Vedder and Clark, note, there is more similarity than difference between the two diseases. They have never observed any edema in fowls at all comparable to wet beriberi in man, however, and while there are undoubtedly slight changes in the hearts of fowls suffering from polyneuritis, there is none of the hypertrophy which is such a characteristic finding in human beriberi. With respect to the fowls it also appears that the disease is not simply a peripheral neuritis as has generally been supposed; on the contrary, the entire nervous system appears to be affected. The symptoms of the disease in fowls, Vedder and Clark maintain, are not chiefly referable to degeneration of the peripheral nerves. Degeneration occurs before symptoms arise; advanced degeneration may be present accompanied by no symptoms at all; and degeneration of the nerves remains after recovery has occurred.

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1. Fraser and Stanton: Studies from the Institute for Medical Research, Federated Malay States, 1909, No. 10; Lancet, London, 1909, i, 451.
2. Strong and Crowell: Philippine Jour. Sc., 1912, vii, 271.
3. Little, John M.: Beriberi Caused by Fine White Flour, THE JOURNAL A. M. A., June 29, 1912, p. 2029.
4. Vedder, E. B., and Clark, E.: A Fifth Contribution to the Etiology of Beriberi, Philippine Jour. Sc., 1911, vii, 423.

THE IRREDUCIBLE MINIMUM OF KIDNEY SUBSTANCE

The liberal surplus of renal tissue which the body possesses for the purposes of urinary secretion is sufficiently emphasized by the absence of any pathologic systemic upsets when an entire kidney is removed, as occasionally happens in surgical experience. One intact remaining kidney can adequately perform the functions of excretion which the metabolism calls for. At what point the limit of safety is reached, that is, how much kidney substance is indispensable for the routine requirements of the organism, is primarily a question for experimental solution. One method has consisted in excising segments of the organ and thus by gradual reduction of the kidney substance determining what is the irreducible minimum of the latter compatible with the continuance of health. Those who have proceeded in this way have placed the limit at not less than one quarter of the renal tissue. Pearce, whose observations are perhaps the most careful of all those based on this method of excision, concluded that the removal of larger amounts, and sometimes of three quarters of the substance, leads to the metabolism condition of starvation.[1] The metabolism in excessive kidney reduction is that of inanition dependent on gastro-intestinal disturbances presumably due to faulty chemical correlation. Apparently toxic substances are eliminated into the intestine. Bradford's reduction experiments even led him so far as to suggest that the kidneys have an influence on general metabolism; for he observed conditions which appeared to him to be due, not to retention of products of normal metabolism, but to an increased tissue disintegration affecting especially the muscles. Subsequent researches have made it appear probable, however, that mere reduction of kidney substance, even to a minimum compatible with life, does not lead to disturbances of metabolic function capable of being utilized in the explanation of uremia.

Nature's method of bringing about a pathologic decrease in the amount of functioning renal tissue is usually far less sudden and certainly less severe than any process of instantaneous surgical excision. The phenomena of disease are more closely imitated by the plan of inducing necrosis by ligation of branches of the renal arteries.[2] When this is carried out, as it has been by Dr. Pilcher[3] in Cleveland, the functional efficiency of the kidney appears in even more favorable light than heretofore. As might be anticipated, ligation of one branch of both renal arteries, that is, approximately half of the blood-supply, does not cause any noticeable disturbance in renal performance. The urine remains practically normal. Shutting off three fourths of the arterial supply results in marked temporary prostration, anorexia and loss of weight, with nitrogen output much greater than the intake. The animals gradually recover, however. On the apparently justified assumption that the ligated areas take no part in urine formation, it is permissible to conclude that one fourth of the kidney is able to secrete urine almost as effectively as the entire kidney area. The urine was practically normal: there was an absence of protein and casts. Cardiac hypertrophy did not occur.

The theory that the kidney furnishes an internal secretion having an important influence on general metabolism has been exploited repeatedly since it was first brought to general notice by Brown-Séquard.[4] There is little to substantiate it at present. Certainly if such a function exists it is not noticeably disturbed by events which exclude the physiologic activity of 75 per cent. of the kidney substance.

1. Pearce, R. M. The Influence of the Reduction of Kidney Substance on Nitrogenous Metabolism, Jour. Exper. Med., 1908, x, 632.
2. MacNider, W. D.: Jour. Med. Research, 1911, xxiv, 425.
3. Pilcher, J. D.: Excretion of Nitrogen Subsequent to Ligation of Successive Branches of the Renal Arteries, Jour. Biol. Chem., 1913, xiv, 389.

4. Brown-Séquard: Importance de la sécrétion interne des reins, Arch. de physiol. norm. et path., 1893, v, 778.

Current Comment

CHEMICAL CHANGES PRODUCED IN COW'S MILK BY PASTEURIZATION

It has been stated frequently that pasteurizing milk changes its chemical composition and renders it less digestible and less suitable for infants. The changes which are said to take place are chiefly the precipitation of soluble phosphates, which change produces defective nutrition, and the altered constitution of casein and lactalbumin, which renders pasteurized milk inferior as food. These objections originated at the time when high temperatures were employed for pasteurization, and in the absence of reliable investigations were tacitly applied to modern pasteurization at low temperatures. Rupp[1] publishes a series of experiments to determine the following points: (1) the changes in soluble phosphates of lime and magnesia; (2) the extent of change in the protein, and (3) the change in acidity produced by pasteurization of milk at various temperatures. Pasteurizing milk at 155 F. for thirty minutes did not change the amount of soluble phosphate of lime beyond the limits of experimental error, and the phosphate of magnesia remained unchanged. The albumin content was tested in raw milk and in milk pasteurized at various temperatures for thirty minutes. At 145 F. no albumin coagulated; at 150 F. 5.71 per cent. were insoluble, and at 155 and 160 F., 12.76 and 30.87 per cent., respectively, were insoluble. The coagulability of casein with rennin was tested in similar fashion. When the pasteurization temperature was 131, 140 and 149 F., the casein coagulated more rapidly than in raw milk. Retardation of rennin coagulation commenced at 158. Coagulation consumed twice the time as compared with raw milk at 167. The acidity of the milk was slightly reduced after pasteurization. Rupp concludes that milk pasteurized by the holding process at 145 F. for thirty minutes suffers no appreciable chemical change. The

1. Rupp, Philip: Bull. 166, Bureau of Animal Industry

soluble phosphates of lime and magnesia do not become insoluble at 155. The lactalbumin does not coagulate at 145, but begins to become insoluble at 150. The time required for coagulation of casein is slightly reduced in milk pasteurized at temperatures up to 149 F. The results are especially interesting as they dispose of another prejudice against the pasteurization of milk.

SUICIDE WITH BICHLORID OF MERCURY

Some weeks ago, considerable publicity was given a case of accidental poisoning from bichlorid of mercury tablets. The case was so "featured" as to lead the public to infer that corrosive sublimate poisoning was not only a sure but also a painless route to the other world. Since this accident, the papers have chronicled, almost daily, cases of suicide in which bichlorid of mercury was the drug used. There is no doubt that many unstable persons who, in fits of depression contemplate suicide, are restrained from taking the fatal step by the dread of the unknown agony they may suffer in committing it. To such, the knowledge of a sure and painless method of death removes the only restraining influence left. It is fitting, then, that the public should be acquainted with the fact that there are few modes of suicide more painful and in which the agony is longer drawn out than that due to the taking of bichlorid of mercury. If this fact were given the same publicity that was accorded the case of accidental poisoning, there is little doubt that the corrosive sublimate method of self-destruction would cease to be the fatal fad it has recently become.

THE ADVERTISING OF LOW-GRADE MEDICAL COLLEGES

There are a number of seriously low-grade colleges which depend for their existence on the ready acceptance of their advertisements by lay newspapers and periodicals and by medical journals. For example, the Chicago Hospital College of Medicine, an "afternoon and evening college," regarding the origin of which comment has previously been made,[1] apparently has had no difficulty in placing its advertisements even though it is reported by the Illinois State Board of Health as "not in good standing" and its diplomas, therefore, do not make the holders eligible to practice medicine in Illinois or the majority of other states. Another example is the Jenner Medical College, whose advertisement has appeared regularly in several Chicago newspapers and in some of the popular periodicals. The advertisement of the latter college includes the statement, "Fully recognized by the Illinois and other state boards of health" notwithstanding the fact that official statements from twenty-nine state licensing boards report this college as not fully recognized. Through shrewd advertisements such institutions as these are enabled to prey on public ignorance, and to profit directly or indirectly by taking the hard-earned money of the "poor boy" whom some of them profess to serve. If there were a dearth of thoroughly equipped medical colleges, or if there were a lack of opportunity for worthy students who are poor in purse to secure a medical education, then there might be some justification for upholding these inferior colleges. But such is not the case. This country still has fully one-third of the world's supply of medical colleges, and among these are now many which in standards, teachers, equipment and clinical facilities compare favorably with any abroad. Furthermore, in several of these thoroughly equipped colleges the student can secure an excellent training in the same time and with even less money than he is required to pay in low-grade institutions. Again, the diploma from the better school entitles the graduate to practice medicine in any state of his choice, while a diploma from the low-grade college is now not recognized in most of the states. A glance at the lists of students enrolled in these inferior colleges shows that a large proportion are foreigners who, doubtless having in mind the unquestionably high standards of medical schools abroad and being unacquainted with the amazing diversity of standards among the medical schools in this country, become an easy prey to the self-laudatory if not actually misleading advertisements of these inferior colleges. It is certainly morally wrong if not an actual crime for a medical institution to entice students to enter a profession for which they may not be fitted educationally or otherwise; even more so if that institution is without adequate equipment. It is doubly wrong to take the hard-earned money of the student of limited means and allow him to spend several years of his life in obtaining a degree which when secured does not qualify him for a license to practice in the majority of the states. This action does the student an injury which may seriously affect his entire life, and the practice is aided and abetted by the newspapers and magazines which are willing to carry the advertisements of such schools. We cannot believe that any self-respecting newspaper editor would accept such advertisements if he were acquainted with the facts. It is about time that some thought be given to the injury to the students who are made the prey of such institutions.

1. Another Joint-Stock Medical College for Chicago? editorial, The Journal A. M. A., Jan. 13, 1912, p. 122.

Medical News

ALABAMA

City Hospital for Montgomery.—The Ladies' Infirmary Association of Montgomery has offered to contribute $30,000 toward the erection of a city hospital, asking the city in consideration thereof to donate $2,500 annually toward the maintenance fund.

CALIFORNIA

Personal.—Dr. A. P. O'Brien has been appointed police surgeon of San Francisco, vice Dr. Mahoney, deceased.

State Hospitals Organize.—The executive heads of the hospitals of California met in Los Angeles, July 31, and formed the organization of California hospitals to foster the improvement of hospital management and to promote friendly intercourse among the staffs of the component hospitals. Dr. H. P. Barton was elected president and Dr. D. Gochenaur, San Diego, vice-president.

ILLINOIS

The Fight Against Tuberculosis.—Cass County Association for the Prevention of Tuberculosis was organized at Virginia, July 30, with Drs. Albert R. Lyles, Virginia; John G. Franken, Chandlerville; Jos. M. Swope, Arenzville, and Jas. A. Glenn, Ashland, vice-presidents.——Bids for eight cottages for the

tuberculosis department of Oak Forest Infirmary were received by the Cook County Board of Commissioners August 4. The bids varied from $112,800 to $142,984.

Hospital Notes.—At a meeting of the board of trustees of the Watseka Hospital, July 30, A. F. Goodyear was elected president of the board and it was voted to take up the deed of the Larson property on which the hospital is to be erected. A committee was appointed to investigate building plans and have the construction of the hospital carried on as rapidly as possible.——Plans have been executed and contracts are being awarded for a new contagious hospital to be built in Evanston by James A. Patten. Mr. Patten offered to build such a hospital if $100,000 should be subscribed by citizens of the town as an endowment fund. The building is to be four stories in height, the three upper stories being devoted to hospital wards.

Chicago

Coroner's Laboratory Opened.—An analytical laboratory for the coroner's office has been opened in the County Building and work has been commenced by the coroner's chemist, Dr. William D. McNally.

Jury of Women.—The first jury of women ever impanelled in Cook County passed on insane cases at the Detention Hospital Court, August 7. Dr. Clara P. Seippel, assistant city physician, was foreman of the jury and Dr. Anna Dwyer a member.

INDIANA

Hospital Notes.—The Board of State Charities, at its meeting July 29, authorized the erection of the building of a new county infirmary for Fayette County.——The new Elkhart General Hospital, recently completed at a cost of $80 000, was opened for public inspection, July 26-27, and for the reception of patients, July 29. The building is three stories with accommodation for forty-eight patients.——Members of the Masonic Fraternity of Fort Wayne have started a movement for organizing a non-sectarian hospital in that city. The proposition contemplates taking over Hope Hospital, rebuilding it and providing it with an entirely new equipment.——Frances Willard Hospital and Training School has been incorporated at Hammond with a capital stock of $60,000.——The cornerstone of the new St. Francis Hospital, Beech Grove, Indianapolis, was laid by Bishop Chartand, July 16. The hospital is to be conducted by the Sisters of St. Francis, will cost about $200,000 and will accommodate 200 patients.

Personal.—Dr. T. L. Eads of Michigan City was robbed August 9 of a gold watch and $21,000 in mortgage notes.——Dr. G. W. Buckner, a colored physician of Evansville, has been appointed United States Minister to Liberia.——The following physicians of Indianapolis spent the summer abroad in travel and attending the International Medical Congress: Dr. J. F. Barnhill, Dr. W. F. Clevenger, Dr. David Ross, Dr. John Oliver, Dr. H. O. Pantzer, and Dr. A. C. Kimberlin.——Dr. Thomas Kennedy, ex-president of the Indiana State Medical Society, Dr. J. H. Eberwain, and Dr. Charles R. Sowder, who have been seriously ill, have recovered their health.——Dr. B. B. Pettijohn, Indianapolis, after taking examination, has been commissioned in the Medical Reserve Corps of the United States Army.——Dr. Frank W. Foxworthy, Indianapolis, chairman of the program committee, attended the American Life Convention which met in annual session at St. Paul, August 19 to 22.——Dr. C. R. Strickland, Indianapolis; Dr. J. C. Sexton, Rushville, accompanied the Indiana auto manufacturers on their coast trip as staff surgeons.

KENTUCKY

New Milk Station Opened.—A new milk station was opened by the Louisville Babies' Milk Fund Association at the Whittier School at Thirteenth and Maple Streets. Clinics are held each Wednesday afternoon and a trained nurse is on duty between 2 and 3.

Tuberculosis Commission to Employ Nurses.—Four district nurses will be employed by the State Tuberculosis Commission to visit communities which will pay the living expenses of the nurses and to introduce a system of district nursing. Three counties have requested already that nurses be sent there.

MARYLAND

Public Welfare Exhibit.—The public health exhibit of the Medical and Chirurgical Faculty opened for a week on August 11 at the Young Men's Christian Association Building in Frederick. It includes alcohol, tuberculosis, infant mortality, and social and municipal sanitation.

Plans for Psychopathic Ward.—Plans for the psychopathic department to be established at the Springfield Hospital for the Insane were submitted at a meeting of the board of directors, July 30. The new building is to cost about $80 000 and the expense will be met by a bond issue recently authorized by the legislature. It will be built in the form of a cross and will be located between the men's and women's buildings.

Baltimore

Personal.—The following sailed for Bremen, August 12: Drs. J. L. Hooper and Robert Hoffmann of Baltimore, and Drs. Walter Fewkes and John A. Whaling of Washington.——Dr. A. L. Fahrsenfeld has been appointed medical examiner of schools, vice Dr. I. R. Page.

Water Treatment to Prevent Typhoid.—The health authorities are using 3,000 pounds of hypochlorite of lime daily with the view of purifying the drinking water and preventing the prevalence of typhoid fever. A report shows that 99 per cent. of the bacteria in the water last year were killed by the hypochlorite.

MICHIGAN

Building for Physicians.—S. S. Kresge is erecting an eighteen-story building at Park Street and Adams Avenue, Detroit, to cost about $700,000. Fifteen of the eighteen stories of this building are to be devoted to physicians' offices, and the building will be known as the Kresge Medical Building.

Hospital Notes.—St. Mary's Hospital, Detroit, has announced that it can receive no insane persons who are city charges, because of the crowded condition of the institution.——The new service building of Harper Hospital, Detroit, was opened August 4. The building is the center of the unit arranged for the hospital, 147x48 feet, and two stories in height.——The second floor of the new Hudson memorial Hospital is ready to receive patients and will accommodate twenty-two patients. The building when completed will be six stories in height and will accommodate one hundred and fifty patients.——A resolution was endorsed July 29 in the Detroit City Council empowering the Board of Poor Commissioners to acquire sufficient land on which to erect a hospital for the care of the sick poor of the city. The resolution was referred to the committee on health and city hospitals.

MINNESOTA

Plea for Sanatorium.—Drs. J. A. Gates, Kenyon, and M. W. Smith, Red Wing, made pleas before the county commissioners of Goodhue County for an appropriation of $15,000 for the establishment of a tuberculosis sanatorium for Goodhue County.

Sanatorium Notes.—Clay and Becker Counties have arranged to make a joint appropriation of $15,000, which, with a state appropriation of a like amount, will be sufficient for the construction of a new tuberculosis sanatorium with a capacity of thirty patients.——Otter Tail County has completed a sanatorium for tuberculosis at a cost of $40,000 with a sixty acre farm of which forty acres are under cultivation.——It has been decided that Duluth will not attempt any legal opposition to the Mercedes Sanatorium for Incurable Consumptives which Mrs. Julia Wood is planning to start.——The physicians of Goodhue County have launched a publicity campaign for the establishment of a county sanatorium in accordance with the recent act of the legislature.

NEW YORK

Personal.—Dr. William H. Jennings of Wellsville and Dr. J. William White of Fonda have sailed for Europe.

Death of Instrument Manufacturer.—J. M. Taylor, president of the Taylor Instrument Companies of Rochester, N. Y., died July 31.

New York City

Personal.—Dr. and Mrs. John P. Campbell, Dr. and Mrs. J. Clarence Sharp, Dr. Thomas R. Killilea and Dr. Francis E. Butler have sailed for Europe.

Cocain Users Sentenced.—Nine persons arrested in a raid recently have been sentenced to terms of imprisonment ranging from one to three months for using cocain. Of these six were women and three men. Ten other persons arrested in the same raid were taken to the Court of Special Sessions on the charge of selling cocain. This raid was a part of the campaign against cocain instituted some time ago by Rev. J. B. Curry of St. James Church.

Antitoxin Supplied Free of Charge.—The Health Department has sent a notice to physicians in Manhattan stating that it is believed that the death-rate from diphtheria can be reduced by the administration of 5,000 units of antitoxin on the first day of the disease. To further this end the department announces that beginning September 1 it will, whenever necessary, between the hours of 9 in the morning and 5 in the afternoon, deliver free of charge to any address in Manhattan antitoxin for the treatment of diphtheria.

The Infant Mortality-Rate.—The Babies' Welfare Association makes itself responsible for the statement that fewer babies in proportion to the population have died in New York City during the past six months than in any other important city in the United States. There were 100 fewer deaths of infants under 1 year of age than during the same period of 1912. Chicago, Philadelphia and Buffalo show a higher death-rate for the first six months of 1913 than for the corresponding period of 1912. The Welfare Committee think that the extreme heat of the present summer has affected the rate in this city unfavorably, especially in the more crowded sections, as might be expected.

Health Department Issues New Publication.—On the first of August the Department of Health sent out its first issue of a periodical for the information of employees of the department called "Staff News." This bulletin will be the official medium of communication of general orders from the board of commissioner, and of instructions issued by the heads of bureaus and divisions. It is hoped to expand this publication and to make it interesting and valuable to employees of the department who now number 3,036 and it is believed that it will be effective in developing a feeling of community of interest among employees and thus improve the service.

Reduction in Death Rate a Campaign Issue.—One of the main arguments of the fusionists for a continuation of anti-Tammany rule is that during the present city administration the infant death rate has been cut from 134 per 1,000 in 1910 to 120 per 1,000 in 1911 and a still further reduction in 1912. They lay great stress on the work of the milk stations, on the increase in their number and on the entire work of the Department of Child Hygiene. When the fusionists came into office this division of the Health Department was receiving a budget allowance of $348,190, while it is now receiving $600,000, but the elimination of graft and waste has more than made up for the increased appropriation to this work. The argument closes with an appeal to voters to continue the anti-Tammany control of the board of estimate and apportionment in behalf of the public health.

Little Italy Fighting Flies.—Under the newly organized Bureau of Public Health and Hygiene of the Association for Improving the Condition of the Poor an interesting experiment is being conducted in the heart of the Italian population of the upper East Side. Through the generosity of Mrs. A. A. Anderson, $2,000 has been put at the disposal of the association in order to eliminate as far as possible all flies from one block. Screens are furnished for all windows in the block and a special inspector from the Department of Health keeps unusually careful watch over the sanitary conditions of that block and the neighboring ones. It is hoped that a comparison of the infant mortality of this block with those in which no such careful elimination of the fly is striven for will prove the part that this pest plays in the high death rate of babies. Fly traps, fly papers and fly swatters are also furnished to the dwellers in this neighborhood and disinfectants to the owners of stables. Accurate statistics are being kept for the block and the results of the experiment will be announced at the end of ten weeks from the initiation of measures against the fly.

OHIO

Salvation Army Opens Dispensary.—A free surgical dispensary has been opened by the Salvation Army in Columbus. Among the members of the staff are Drs. D. G. Sanor, A. C. Miller, Robert Leach and Caspar H. Benson.

Tuberculosis Farm Sold.—The tuberculosis farm purchased by Miami and Darke counties two years ago, for $15,000, on which it has been intended to erect a bi-county tuberculosis hospital (but this was prevented by legal action), was sold recently for $7,300.

PENNSYLVANIA

Automobile Ambulance for Chester Hospital.—The Chester Hospital has received its automobile ambulance, purchased through public subscriptions at a cost of $4,000.

Lectures on Health.—Dr. A. Barr Snively, Waynesboro, chairman of the Franklin County Medical Society committee on health and public instruction, reports that nearly all the schools of the county have been visited by the physicians assigned by the committee. The talks on health have been well received. The talks were on (1) necessity of fresh air; (2) need of cleanliness in person and surroundings; (3) risk of personal contact with the ill, or unhealthy conditions, disease germs, infection, etc.; (4) avoidance of needless exchange of or mutual use of eating utensils, articles of toilet, etc.; (5) danger of infection from flies; (6) pollutions of drinking water and milk supplies.

Philadelphia

Personal.—Dr. Milton B. Hartzell, professor of dermatology at the University of Pennsylvania, was appointed assistant diagnostician and consultant in the Bureau of Health, August 14, to succeed Dr. Jay F. Schamberg, resigned.——Dr. J. William White sailed for Europe, August 16. He expects to be gone eight months, making a tour of the world and returning by the Panama Canal.——Dr. Charles B. Penrose sailed for Europe, August 14.

Spread of Typhoid Fever.—There were seventy-nine cases of typhoid fever reported to the Bureau of Health during the week ending August 16, an increase of fourteen over the previous week. The first week of August, thirty cases were recorded and there has been a steady increase. Nearly all the cases are in the territory subject to intermittent contamination of the water supply, where corporations and manufacturer have made connections as fire safeguards. The administration is doing everything possible to compel discontinuance of such a dual piping system. The Department of Health has issued a warning to householders, supplied by the Torresdale filter plant to boil all water used for drinking.

City Dentists Work for School Children.—The work of the city dentists at the City Hall Dispensary and at the branch in the Southwark School at Ninth and Mifflin Streets, has been of such high quality and of such volume that more branches are planned. Dr. Percy B. McCullough, chief of the dental division of child hygiene, with eight assistants, during the five months from January to the last of May of the present year, at the two dispensaries performed a total of 15,323 operations. School children are sent to the dispensary by the school medical inspectors, and these mean 90 per cent. of the whole 175,000 school children in the city. Each child receives a card on which is written the day and hours each is required to report and this is shown to the teacher, and visits to the dispensaries are attested by the dentist.

GENERAL

Bequests and Donations.—The following bequests and donations have recently been announced:

New York Orthopedic Hospital, $6,748, by the will of O. E. Schmidt.

St. John's Guild, New York City, $2,500, the Home of St. Giles the Cripple, Bronx Children's Aid Society and Society for the Prevention of Cruelty to Children, each $2,000, Brooklyn Hospital, Brooklyn Home for Consumptives and Brooklyn Nursery and Children's Hospital, each $1,000 by the will of Evelyn S. Ridgeway.

Philadelphia Home for Incurables, $5,000 for the endowment of a free bed by the will of Miss Emily Bailey.

Four Albany (N. Y.) Hospitals, $100,000 by the will of Anthony N. Brady, New York City.

Presbyterian Hospital, Philadelphia, $100,000, one-half to be expended in building and the other half for maintenance, $5,000 to endow a bed, in memory of Sarah L. Broadhead.

Society for the Prevention of Cruelty to Children, $5,000 by the will of Miss Elizabeth L. Lewis, Philadelphia.

Mercy Hospital, Kansas City, $10,000 by the will of Mrs. Nettie Bernard, Henderson.

Rhode Island Hospital, Providence, $200,000 for the erection of the Jane Frances Brown Building for private patients, St. Joseph's Hospital, Providence, $5,000, by the will of Jane Frances Brown.

The Mary Dykeman Memorial Hospital, Logansport, $100,000 by the will of the late Judge D. D. Dykeman.

Department of Agriculture Advises that Milk be Pasteurized at Low Temperature.—In order to determine the best way of pasteurizing milk so as to kill the disease germs and yet not give the milk a cooked flavor or lessen its nutritive value, the Department of Agriculture, through its Dairy Division, has been conducting a series of experiments, treating milk at different temperatures and for different lengths of time. According to the report on these experiments in Bulletin 166 of the Bureau of Animal Industry, when milk is pasteurized at 145 F. for thirty minutes the chemical changes are so slight that it is unlikely that the proteid (muscle building element) or the phosphates of lime and magnesia are rendered less digestible than they are in raw milk. Moreover, from a bacteriologic standpoint, pasteurizing at low temperatures is found to be more satisfactory than pasteurizing at high

temperatures. According to Bulletins 126 and 161, where low temperatures are used the majority of bacteria that survive are lactic acid organisms which play an important part in the normal souring of milk. When milk is efficiently pasteurized at high temperatures, the bacteria which survive are largely of the putrefactive kinds, and milk so treated if kept for any length of time has a tendency to rot instead of sour. From the standpoint of economy, the technologist of the Dairy Division finds that pasteurizing at low temperatures calls for less heat. It is found that it takes about 23.5 per cent. less heat to raise milk to the temperature of 145 F. than to a temperature of 165 F. A similar gain is a saving of the ice needed, because it will require 23.5 per cent. more refrigeration to cool milk to the shipping point when it is pasteurized at the higher temperature. The department, therefore, recommends that "when market milk is pasteurized it should be heated to about 145 F. and held at that temperature for thirty minutes."

CANADA

New Officers.—Dr. Herbert J. Hamilton has been elected president of the Toronto Academy of Medicine; Dr. Harry B. Anderson, vice-president; Dr. Harry J. Smith, secretary; Dr. Wm. A. Young, treasurer.

Cigarette Smoking Increasing in Canada.—Two hundred million more cigarettes were smoked by Canadians in 1912 than in 1911, the total numbered consumed, according to a report of the Inland Revenue Department, being 975,325,501. Indeed, the consumption of tobacco and alcoholic liquors increased all around. The per capita averages are: Spirits, 1.112 gallons, compared with 1,030 in 1911; beer, 7.005 against 6.598; wine, 131 against 114; tobacco, 3.818 pounds, against 3.679 in 1911, which includes the figures for cigarettes.

New Hospital for the Insane in Ontario.—Twenty miles east of Toronto, near the town of Whitby, facing on Lake Ontario, the Ontario government is establishing a new hospital for the insane, to take the place of the institution now located in Toronto. On a site of 640 acres one of the finest institutions of this character in America is to be established. It is to have accommodation for 1,500 patients, and is so constructed that additional units for the accommodation of five hundred may be added at any time. There are to be a hospital farm, recreation grounds, amusement hall and a church. As far as possible prison labor is being used in every department of construction.

Tuberculosis Prevention in Winnipeg.—Winnipeg took up the fight against tuberculosis in 1908. Since that time proper statistics regarding the disease have been kept, notification was inaugurated, an anti-tuberculosis society established, a dispensary, hospital for advanced cases, an anti-spitting by-law, day and night camp, open-air schools, much educational work. The provincial government now maintains a sanatorium with accommodation for about sixty patients. By a special grant from the city the General Hospital maintains a dispensary. There are city nurses who follow up cases. The Anti-Tuberculosis Society distributes much literature and has lectures delivered to the public. For advanced cases the city has a hospital of fifty beds. At least seventy-five per cent. of all the cases are now being notified. The death rate from tuberculosis has decreased in the five years from 123.4 per 100,000 of the population to 94.4.

Ontario Medical Commission.—While the citizens and medical profession of Toronto were participating in the opening of the new Toronto General Hospital, they heard of something even as much if not more interesting to the province at large. In receiving the buildings on behalf of the people of the province of Ontario, the Prime Minister, Sir James Whitney, took occasion to announce a most important departure on behalf of his government, to the effect that the government had decided to appoint a royal commission on the whole subject of medical education and the practice of medicine in the province. The object of this commission, Sir James stated, would be to acquire information whereon to base legislation for every imaginable application, so that all could be regulated and controlled in the interests of the people. The Prime Minister said that it was intended that medicine would include all plans or means of alleviating or curing human defects, disorders, diseases or wounds; and to this end an investigation will be made of the College of Physicians and Surgeons and its governing body, the Ontario Medical Council, the medical faculties of all universities, osteopathy, Christian science, dental schools, nurses' training schools, opticians and their training. When this commission is appointed and their report made, legislation will be provided of lasting benefit to the province.

LONDON LETTER

(From Our Regular Correspondent)

LONDON, Aug. 2, 1913.

British Pharmaceutical Conference: Pharmacists Demand Recognition

The fiftieth annual meeting of the British Pharmaceutical Conference has been held in London. It was attended by pharmacists from all parts of the country as well as from Australia and the Continent. The president, Mr. J. C. Umney, who is a member of the committee of reference in pharmacy which assists the pharmacopeia of the general medical council (consisting entirely of physicians), said that the British Pharmacopeia for 1914 was almost ready. The committee of reference had done its best in all loyalty to the general medical council, but he was confident that it was the last occasion on which pharmacists would aid in the revision of the British Pharmacopeia on the conditions which now obtain. Contrasting this country with various foreign countries he emphasized the fact that in the latter medicine and pharmacy were almost equally represented officially on the revision of the pharmacopeia. He suggested that the Pharmaceutical Society should consider a bill laying down the conditions under which future pharmacopeias should be revised. Among the most important papers read were those on the "Possible Iodin Standardization of Thyroids for Pharmaceutical Purposes," on the "Standardization of Opium," and "The Myrrh of Commerce."

The Government Inquiry into Nostrums

In previous letters to THE JOURNAL the evidence given at this inquiry has been published. The report is now under consideration. It is thought that one of the chief recommendations will be that the administration of the regulations affecting the sale and advertisement of proprietary articles should be carried out by one body under one department of the state, instead of under several, as at present. It will probably be agreed also to recommend that quack advertisements professing to cure some of the deadliest diseases, such as cancer and consumption, shall be prohibited and that there shall be a more rigorous censorship of the advertisements of patent medicines professing to cure peculiarly feminine complaints. Another subject with which the report may be expected to deal is whether the venders of patent medicines shall be required to accompany each article with a statement of the ingredients. It is thought unlikely that this recommendation will be made. The view which will probably be taken is that to give a statement of the formula to the state authority would meet the case.

Alarming Increase of the Non-Vaccinated

The last vaccination law (of 1907) was a great concession to antivaccinationist sentiment and exempts from penalty parents who make a declaration within four months of the birth of a child that they believe that vaccination would be prejudicial to its health. The results are shown by the following figures: In 1907 the percentage of exemptions (then obtained by an inconvenient and difficult legal process) was 6.3. In 1908 this percentage had risen to 17.3, and in 1912 to 31.6. It is true that an outbreak of small-pox has not occurred for some years, but sporadic cases are always occurring on ships which arrive in this country from all parts of the world. In this way epidemics have been generated in the past, notably a large one in Glasgow. Health officers are now much concerned at the greater prospects of the spread of the disease. All we can trust to is prompt isolation, for antivaccinationist sentiment is too strong to allow more stringent laws as to vaccination. A small-pox epidemic on a scale unknown to this generation might prove efficacious.

SEVENTEENTH INTERNATIONAL MEDICAL CONGRESS

August 6-12, 1913

(From Our London Correspondents)

The Seventeenth International Medical Congress was formally opened at the Albert Hall, August 6, by Prince Arthur of Connaught, who welcomed the delegates and members in the name of the king. The number of members attending was large, nearly 8,000. The scene was a brilliant one, enlivened by the academical costumes and military and naval uniforms of every civilized country. The presidents of the College of Physicians and the College of Surgeons and the Society of Apothecaries were attended by their mace bearers. Sir Edward Grey, Minister for Foreign Affairs, welcomed the foreign delegates on behalf of the government. He referred to the

increased interest of the public in science. The risk of lay ignorance was no longer so intractable as in former generations; the opposition to scientific discoveries had given way to expectation. The public was now teachable. He would not say that with regard to all sciences. If, for instance, politics was to be called a science he would speak with considerable hesitation; not every one was teachable in a subject in which every one thought he understood.

Sir Thomas Barlow, the president of the Congress, then delivered his address. He referred to the previous congress of 1881 in London and to the great men then present who have all passed away. The president was Sir James Paget, the great clinical pathologist, and Jenner, Gull, Wilks, Gairdner, the great teachers of clinical medicine, were there. We shall not see their like again, for their careers began before the days of specialization. Hughlings Jackson, the philosophical exponent of the new neurology, was present. Hutchinson, the patient, accurate recorder of disease in many departments, characteristically was the organizer of the clinical and pathologic museum. The pioneers of abdominal surgery, Wells, Keith and Tate, were there. Huxley, the most brilliant expositor of natural science, discoursed on the relations of medicine and biology. Bowman, the founder of modern English ophthalmology, was present, and Lister, then in the zenith of his great career. Among the foreigners were von Langenbeck, Esmarch, Donders, Snellen, Baccelli, Bigelow, Austin Flint, Billings, Brown-Séquard, Charcot, Lancereaux and others. He reviewed the address of Pasteur, "who towered aloft among his contemporaries," and linked it up with the present studies of Flexner. In his reference to our progress in tropical medicine he said: "Here it is fitting that we should offer our homage to our American brethren for their splendid hygiene work in Cuba, in Panama, in the Philippines, and in Porto Rico, and for the efforts which they are organizing for a world-wide crusade against ankylostomiasis. He referred to our increasing knowledge of the protozoal diseases, to the advances in chemical pathology, and to the gradual evolution of the doctrine of thyroid insufficiency and of its therapeutics, a gradual evolution from Ord's definition of myxedema, a model of deduction, and the consequent study of the internal secretions and the therapeutic employment of organic extracts. The dietetic problems next came under review, particularly the milk problem, and diseases such as beriberi and scurvy, which are associated with a dietetic factor. The study of chronic alcoholism, of oral sepsis, and of intestinal stasis, the discovery and application of the Roentgen rays and radium, the rewriting of physiology in the light of medical knowledge were referred to. The triumphs of surgery were enumerated and the varied ways in which medicine now cooperated with economics, social legislation and philanthropy, which we sum up briefly as public health. Sir Thomas Barlow concluded by welcoming the members in the name, not only of the medical men of the British Isles, but of our brethren of the oversea dominions of the empire.

The Address in Medicine

The address in medicine was delivered by Professor Chauffard of Paris to a large and interested audience in that clear and forceful style which distinguishes the French scientist. He took for his subject "Medical Prognosis: Its Methods, Its Evolution, Its Limitations." Commencing with Hippocrates, he praised the penetrating vision of the Father of Medicine in grasping, coordinating, and interpreting the most minute details without any technical means of investigation. The modern era began with Auenbrugger and Corvisart who introduced percussion, and Laennec, the inventor of auscultation. The latter endeavored, in his own words, "to place in regard to diagnosis internal organic lesions on the same line with surgical diseases." The detection of morbid changes in the living subject gave prognosis a more certain basis. To detect the lesion in the living subject, to identify it in the cadaver and to reduce therefrom diagnosis and prognosis became the system of "organicist medicine" which lasted for more than half a century. This noble system contained much truth, but was a narrow doctrine which tended to confuse the lesion with the disease which caused it. Anatomic prognosis soon found its limitations. The succeeding stage was marked by the influence of Claude Bernard's work. With him pathology became deviated physiology, and disease became a disturbance of normal functions. Coming to the present day, what were the limitations of medical prognosis? An essential distinction must here be made between theoretical and clinical prognosis. Theoretically almost everything is known to us. In a given disease we can enumerate most of the complications or contingencies that may modify its course, but all that is book prognosis, far removed — unfortunately — from the living and individual prognosis, applied not to a disease but to a patient. How many unknown quantities are there in medical practice, and how many surprises! How little does it avail to know all the possible complications of typhoid fever if at a patient's bedside we cannot foresee the intestinal hemorrhage or the perforation which perhaps in a few hours may endanger life. Again, for the newly infected syphilitic, for the gouty subject, for the epileptic at his first attack, for countless other sick patients of all kinds, how many uncertainties for the future! When a morbid condition begins we know theoretically the various paths it may follow; but which one will it follow? That is the real prognostic problem, the solution of which too often eludes our grasp. Finally, and dominating the whole question of prognosis, there remains for us to gage the possibilities of the organism that has fallen a prey to sickness. Shall we find in it the resources necessary for overpowering disease? How much can it stand and how much can we expect of it? That is the great problem which commands and includes all the others. Are we always able to solve it? Professor Chauffard fears not.

The Address in Surgery

The address in surgery by Dr. Harvey Cushing was listened to with great attention by a large audience. It was terse and trenchant and the telling points were frequently applauded. Contrary to expectation, he did not expound some of his original work on brain surgery but took a very general subject, "Realignments in Greater Medicine: Their Effect on Surgery and the Influence of Surgery on Them." He made a strong protest against the antivivisectionist agitation which interferes with the beneficent progress of science that has done so much for humanity. Disorders which gave bread and butter to our predecessors were disappearing as small-pox disappeared after Jenner. One injection robbed diphtheria of its terrors and another meningitis. Typhoid fever was now looked on as a civic disgrace. Tuberculosis was everywhere coming under state care. Governments passed insurance acts which made public officials of the profession at one sweep. Dr. Pound of Cure-Lane was being superseded by his young disciple, Dr. Ounce of Prevention-Street. Surgery had been one of the great factors in the present realignments of medicine, for from Lister and Pasteur the great streams of progress had flowed — in the case of the individual into the art of surgery and in the case of the community into prophylactic medicine. Even the physician who for so long held himself aloof from anything savoring of handicraft returned to it with that useful instrument, the hollow needle. Paracentesis, lumbar puncture and the extraction of blood for diagnostic, or the administration of drugs and serums for therapeutic purposes by a minor surgical act are an acknowledged part of his therapeutic resources. By a strange transformation, too, he became the phlebotomist, and the venesections and cuppings, formerly the overworked province of the barber surgeon, were largely practiced by him. Billroth said about thirty years ago, "Die innere Medicin müsse mehr chirurgisch werden," and this seemed to be what was taking place.

Professor Ehrlich's Address in Pathology

At the general session in Albert Hall Friday, August 8, Professor Ehrlich of Frankfort delivered in German the Address in Pathology taking for his theme chemotherapy. After referring to the work of Jenner, Lister, Sir Patrick Manson, Ross, Castellani, Bruce, Leishman and others in the protozoal diseases, he entered into a technical explanation of the principle of chemotherapy, especially with reference to the work done in elaborating salvarsan. He explained that salvarsan had not only a direct parasiticidal action, but that immunity of parasites to such action could be accounted for only by a purely chemical diminution of their affinity, and a complete exhaustive knowledge of the various chemical peculiarities of a parasite, which he called the "therapeutic physiology of the parasitic cell," was essential for its successful chemotherapeutic treatment. Certain chemical peculiarities are found in many different kinds of parasites. In proportion as more of these chemical affinities were discovered, the greater was the possibility of successful chemotherapy. He still kept in view the idea of freeing the body of microorganisms by one or at most two injections of the proposed remedy, and in his animal experiments this principle is still being pursued. He looked forward to the extension of the principle of chemotherapy as a means of bridging the gaps which still exist in our knowledge of the treatment of some diseases. In the diseases involving protozoa and spirilla good results have already been gained. In a series of other diseases, such as small-pox, scarlatina, typhus, and perhaps also

yellow fever, but above all, the infectious diseases caused by invisible germs, there is a bright prospect of success. In the common bacterial diseases due to streptococcus, staphylococcus, and the micro-organisms of typhoid, dysentery and tuberculosis he feels that the struggle is a hard one, but that success in these diseases will also be attained on the principle of chemotherapy.

Dinner by the Government to the Congress

Nothing could have been more appropriate than the welcome given to the Congress, when Lord Morley, representing the British government, entertained at dinner on Tuesday night, August 5, at the Hotel Cecil, upward of five hundred of the more eminent members of the Congress, including most, if not all, the official representatives. Lord Morley referred to the generation that had passed since the Congress last met in London (in 1881), and to the marvels in mechanics, engineering, electricity and applied chemistry that had been witnessed in the interval, but added that the new truths and new expedients in medicine and the advance in pathology and surgical practice might be counted the most striking marvel of them all. Referring to specialism, he said it was of two kinds, the narrow and the broad, and he hoped that in medicine it would ever be of the latter kind, in which priceless and indispensable work was done in regard to particular organs, parts, and regions, maladies and lesions, so that touch was not lost with organization and function as a whole. As to the relations between politics and medicine, he said that the relations of the government with the medical profession were for the moment not altogether of the easiest, but he assured his hearers that the difficulties were ephemeral and would be surmounted by and by. (This was in reference to the National Insurance Act.) He referred to the great extension of medical influence in the political and social field and in the family and administration of laws, and pointed to "a whole code of housing acts, shops acts, and health acts, including the pending Mental Deficiency Bill, and to the medical protest against the speeding up of education." He touched on the vivisection question, saying that there was a great volume of energetic opinion against unrestricted experiments on living animals, and on the venereal diseases question, saying it would be sheer moral cowardice to shrink from a large and serious inquiry into the extent, causes, and palliatives of this hideous scourge, just as we investigate tubercle or cancer.

Sir Thomas Barlow, President of the Congress, in replying commended the selection of Lord Morley as the government spokesman, for to him we were indebted for instruction in the aims, the partial successes, and the failures of many of the leaders of liberal thought before and at the time of the French Revolution, as well as for the lessons in political philosophy drawn by him from the lives of our eminent statesmen. M. Landouzy, replying for the French-speaking members, drew a parallel between the great geniuses of England and France who had contributed to the march toward progress through the ages, and referred to depth as the distinguishing characteristic of the British temperament. Professor von Schjerning replied for Germany, and proposed the toast of the British Government.

Other Entertainments

The entertainments and excursions afforded were so numerous and lavish that it would be out of the question to attempt to describe them all. In the evening of August 6 the president of the Congress, Sir Thomas Barlow, with the officers, entertained the members of the Congress with their wives and daughters at a conversazione at the Natural History Museum, South Kensington. The museum was thrown open for inspection.

An interesting exhibit was that of Mr. J. Hartley Durrant and Lieut.-Col. W. O. Beveridge, which illustrated the investigation made under the joint auspices of the war office and the British Museum into the nature and origin of the damage occasioned by insect pests in the army biscuits.

On Thursday the Continental Anglo-American Medical Society held its annual luncheon at the Café Royal, and an invitation luncheon took place at the Royal School of Medicine for Women. St. George's and the Middlesex Hospitals were thrown open to parties of visitors, afternoon tea being provided. From 3:30 to 6 Sir Alfred Pearce Gould (the dean) and the Faculty of Medicine of the University of London gave a garden party at Regent's Park College, while the president, treasurers and governors of the Royal hospitals of Bridewell and Bethlehem held a reception in the grounds of Bethlem Hospital. In the evening a dinner was given by the Society of Apothecaries to a limited number of guests in their quaint old hall in Drury Lane. The society has a most interesting history. It was to its efforts that the first medical act, in 1815, which made the possession of a medical qualification an essential for the lawful practice of medicine, is due. The society worthily maintains the traditions and repute of the city companies as lavish yet perfect hosts, and no medical dinners are more widely renowned than those given on occasion by it. The master and wardens received the guests, which included such eminent names as those of Sir Thomas Barlow, Sir Alfred Pearce Gould, Dr. Josué, Professor Janet, Dr. Lovett, Sir Lauder Brunton, Sir Watson Cheyne, Professor Biedl, Sir Malcolm Morris, Sir David Ferrier, Sir Clifford Allbutt, Prof. Sims Woodhead, Professor Abderhalden, Professor Wenkebach, Professor Bateson, Prof. A. R. Cushny, Prof. W. Straub, Sir Arbuthnot Lane, Dr. W. J. Mayo, Professor Ehrlich, Professor Burkhardt and many others. The toast of "Our Foreign Guests" was responded to by Dr. Josué, Prof. Dr. Burckhardt and Dr. Lovett. The quaint old ceremony of drinking from the loving cup was duly performed with its historic ritual. The dinner broke up early, to allow many of the guests to attend one or other of the soirees at the Royal College of Surgeons, at which some 2,000 were present; the Royal Society of Medicine, which entertained another 1,000; the Royal Army Medical College, Milbank, where some 800 were present, and the Grocers' Company, which entertained 500 more. Besides the foregoing, which were general entertainments, there was a reception by the Medical Director General of the Royal Navy at Greenwich to the members of Naval and Military Medicine and of Tropical Medicine and Hygiene at Greenwich in the afternoon, and in the evening a soiree given by Mr. Arthur Cheattle, president of the Otological Section, receptions by the Laryngological and the Anatomical Sections, and the dinner of the Ophthalmological Section.

Friday the 8th was no less full of entertainment than the preceding day, consisting of luncheons, hospital visits and visits to many points of interest.

Sir Thomas Barlow presided at a breakfast given by the National Temperance League, and was supported by Sir Alfred Pearce Gould and Sir Victor Horsley. He referred to the change that had come over the profession in regard to the indiscriminate prescribing of alcohol, and he uttered a special warning to the profession against a "most mischievous thing" in the prevalence of medicated wines. Alcohol ordered therapeutically at all should be given by itself under the strictest conditions as to time of administration, dosage and the continuance of its use. If they believed men were better without alcohol in any form he urged them to use their influence against it.

The Archbishop of Canterbury and Mrs. Randall Davidson entertained some 350 to tea at Lambeth Palace. In the evening at 8 o'clock the Lord Mayor and corporation of the City of London gave a conversazione at the historic Guild Hall. The assembly was of extraordinary brilliancy, court dress, military and naval uniforms and academic gowns and hoods producing a truly kaleidoscopic picture.

The section entertainments were equally numerous.

Of these dinners special note should be taken of that given by the Tropical Medicine Section and the Society of Tropical Medicine and Hygiene under the presidency of Sir David Bruce. Sir David, in toasting the "Progress of Tropical Medicine" reviewed its history from the discovery in 1879 by Sir Patrick Manson of the rôle played by mosquitoes in filarial disease. He referred to Laveran's discovery of the malarial parasite between 1878 and 1880, and quoted a remark of King George that when he was a young lieutenant in the navy no sailor could go into the hospital at Malta without being struck down with Malta fever, and now, the King added, "thanks to the doctors, Malta fever is extinct." The work of Smith and Kilbourne on Texas fever in 1889, Sir Ronald Ross' work on malaria in 1898, and "the wonderful work of Reed, Carroll, Lazear and Agramonte on yellow fever" in 1900 were extolled. Finally in 1903 Colonel Sir William Leishman had uncovered the nature of the mysterious disease, kala azar.

The toast was responded to by Dr. A. Laveran, Dr. B. Hecht and Sir Patrick Manson. Sir Ronald Ross gave the toast of the visitors and guests, which was acknowledged by Professor Agramonte, Professor Blanchard, Professor Eijkman, Professor Fullerton and Dr. Wu of International Plague Commission fame.

International Medical Press Association

The International Association of the Medical Press held its first meeting in Jehangir Hall, University of London, August 5, Dr. Lucas Championnière presiding. An interesting paper

was read by M. Blondel of Paris, Secretary of the Association, in which he urged a unification of medical nomenclature by an international commission, the use in all medical journals of the official terms thus to be codified, or of domestic derivatives therefrom, so that the necessary vocabulary for foreign readers of any journal might be reduced to the more common verbs, prepositions and adverbs of the language, the technical terms being practically international. He further suggested that where writers failed to observe this plan, the international terms should be inserted in parentheses after the national term used by the writer, at any rate in the title and the conclusions. Such a course, if adopted, would undoubtedly facilitate the reading of articles in foreign medical literature by those possessing even the most rudimentary knowledge of the language of publication.

Professor Posner of Berlin presented a report, which was subsequently accepted, in which he urged the formation of technical committees to supervise advertisements in the medical press, with a view to excluding such as contained false claims, and generally purifying and elevating the standard of the advertising columns.

Dr. Dejace (Belgium) was elected President on the retirement of Dr. Lucas Championnière, and Dr. Raoul Blondel (Paris) and Dr. Dawson Williams (London) were reelected respectively general secretary and treasurer. The next meeting will take place at the time and place of the next International Medical Congress.

International Association of Medical Museums

At the Royal College of Surgeons Museum, Lincoln's Inn Fields, Professor A. S. Warthin, of the University of Michigan, presided over a conference of the International Association of Medical Museums on Tuesday, June 5. Professor Warthin said there were now nearly two hundred members, by far the larger number being in America, but the foreign membership was constantly growing. The line of development had broadened. It was no longer a purely pathological museum that was contemplated, but one extending much further into all fields of medicine, particularly preventive medicine. He strongly urged the development of state or municipal traveling museums of preventive medicine and hygiene on a popular basis, such as the traveling tuberculosis museums which had given such excellent results in the United States. The success attained in the United States of America had led to the development of the traveling museums so as to include besides tuberculosis the prevention of typhoid and other transmissible diseases. Sir William Osler pointed out the geographical difficulty in the international development of the association and suggested the formation of a central bureau to control the different branches in various countries, but each country must have autonomy in managing its own museums. He recommended triennial meetings to be held wherever the International Medical Congress meets.

Women and the Congress

No public function of note would be complete in these days without the hallowing presence of the "suffragette," so it is comforting to note that suffragette sandwich-women paraded around the Albert Hall with placards asking "What do doctors think of woman torture? The government is murdering women." Some of them even buttonholed the doctors and essayed to lay their grievances before them, but apparently they tackled foreigners for the most part, who obviously failed to comprehend what they said. Later the following inscription was chalked on the sidewalk in front of the principal entrances to the various halls: "MM. les Médecins, que pensez-vous de la torture imposée sur les femmes par le gouvernement anglais?" and a similar question in German.

The progress of woman's emancipation was, however, marked in a practical fashion in the present congress. In 1881 the *Lancet* reminded the forty-three duly qualified medical women who protested against the exclusion of medical women from membership, that "the Congress is a voluntary assemblage of medical men for a certain purpose, and those who are not asked to join suffer no infringement of their rights." But women doctors abounded at the present congress, and several of them took a distinguished part in the proceedings.

Degrees for American Surgeons

An event of special interest to American medicine took place on the opening day when the Royal College of Surgeons conferred the honorary fellowship of the college on fifteen eminent foreigners, among them Dr. G. W. Crile, Dr. Harvey Cushing, Dr. W. J. Mayo and Dr. J. B. Murphy. The newly elected fellows were entertained at dinner in the college.

The Section Proceedings

A comparison of this congress with the previous London Congress of 1881 shows great differences. In the latter there were only a little over 3,000 members — less than half of the number present on the opening day and the work was divided into fifteen sections. In this congress there were twenty-three sections. While many of the famous medical men of the world were present, it cannot be said that the congress revealed any important discovery, its work consisted largely of stock taking of recent medical progress, showing what new views were becoming accepted. Many of the papers were of great interest and importance, but there were also many which were not and were but a repetition of what was well known, or were crude and unconvincing. The program was generally overcrowded and speakers often raced the clock to get in what they wanted to say in the allotted time, and were brought to a premature end by the chairman's bell. As in all medical gatherings, the incapacity of even those who were eminent and had something to say, to say it properly and concisely, was painfully evident. The fifteen minutes allotted to a speaker if properly used was in most cases amply sufficient to present his conclusions and his reasons for them, but want of conciseness of expression as well as want of judgment in suppressing unnecessary details prevented this. Instead of brief but sufficient general description worse than useless details which only wearied the audience were presented. It is curious that no one seems to trouble about the reform of this universal evil. The man who could compel the education of medical authors in the art of conciseness, before they be permitted to speak or write, would deserve a place in history among the benefactors of humanity.

Section on Medicine

The proceeds of the section on medicine were opened Thursday, August 7, by the president, Prof. Sir William Osler, Bart., with a few introductory observations. Over two hundred members of the section were present, and the first paper heard was Professor Banti's (Florence) exhaustive account of the clinical aspects of hemolysis, more particularly as they affected the spleen. In many patients with splenomegaly, as he pointed out recent work tends to prove that the anemia in such patients is due to excessive hemolysis in the pathologically enlarged spleen. He referred to the association of splenomegaly with cirrhosis, a combination that is familiar, by name if not *de visu*, to most medical men as Banti's disease. He summarized the work that has been done so extensively on the continent of Europe with hemolytic serums, and noted that the spleens of animals treated with such serums showed changes very similar to those met with in the splenomegaly with anemia of human beings.

Professor Chauffard of Paris ascribed an important rôle to the spleen in all the human diseases that were characterized by the occurrence of hemolysis. He did good service by bringing out the fact that the enlargement of the spleen habitual in these cases might be either the cause of the hemolysis, or its effect. If it was the cause of the hemolysis, clearly the condition would be improved and the anemia cured by the operation of removing the spleen. If, on the other hand, it were an effect of the hemolysis, splenectomy would only accelerate the patient's passage to the grave. How can one distinguish between the two cases, he asked, and how can one know when splenectomy is advisable? These questions he could not answer with any confidence himself, and he called for further investigation and information on the results of removal of the spleen: animal experiments had given contradictory results in the hands of different observers.

An interesting paper on "Duodenal and Pyloric Ulcers" was read by Prof. C. A. Ewald of Berlin. Professor Ewald pronounced himself horrified by the statistics of British and American surgeons, who claim to have proved that duodenal ulcer is a commoner, perhaps a far commoner, complaint than ulcer of the stomach. How could such statements be justified? he asked. Reference to the post-mortem room statistics afforded no support to such surgical statements; in his own clinic he had treated 532 cases of gastric ulcer and eighty-two of duodenal ulcer during the three years, 1910, 1911, 1912, and he quoted continental (European) statistics to prove that as a matter of fact gastric ulcer is quite six times as common as ulcer of the duodenum. Yet he was at pains to acquit the surgeons of intentional error in their statistics, and explained that their mistake arose from the fact that they only meet with the severe and the chronic cases of such ulceration, on the one hand, and on the other from their habit of including among duodenal ulcers those ulcers that extend from the pylorus. Professor Ewald doubted

whether regional or occupational factors could afford an explanation of the surgical statistics and the inferences surgeons drew from them. He further felt himself bound to dissent very strongly from the dictum of Sir Berkeley Moynihan, who said that a careful history sufficed to make the diagnosis of duodenal ulcer, and that it was not necessary to examine the patient before coming to a positive conclusion. Professor Ewald pointed out how patients with cholecystitis, appendicitis, tabes with gastric crises, or even severe neurasthenia, might find themselves exposed to operations for the cure of non-existent duodenal ulcers, should such diagnostic criteria as Moynihan's be accepted as adequate. He himself laid stress on three or four points in particular, in the diagnosis of duodenal ulcer: (1) The long duration of the case, and the recurrence of pain two or more hours after food had been taken; (2) the pressure of blood, manifest or occult, in the stools; repeated examinations might be called for; (3) hyperchlorhydria, which is almost constantly found, even when the stomach is free from food; (4) skiagraphic examination of the stomach after a bismuth meal; the duodenum fills up with unusual rapidity, the stomach is often not empty after six hours, the gastric peristalsis is abnormally forcible, and the stomach itself is frequently displaced downward and to the right. Dr. Max Einhorn and Prof. N. E. Brill of New York both disclaimed the surgical statistics to which Professor Ewald had taken such exception, so far as America was concerned, while Prof. R. Saundby (Birmingham), though advocating operative treatment in a large number of the cases of duodenal ulcer, expressed himself as not prepared to go as far in this direction as certain eminent British surgeons.

In the afternoon Prof. N. E. Brill of New York read an interesting paper on "An Acute Infectious Disease Similar to and Perhaps a Modified Form of Typhus Fever." He laid stress on the complete absence of contagiousness characterizing the complaint; typhus fever, on the other hand, was notoriously catching. The new complaint, again, was practically never fatal—out of some 400 cases he had collected only one had died. Typhus fever, on the other hand, was fatal to from 18 to 25 per cent. of the patients as a rule; in even the mildest of the typhus epidemics hitherto described the mortality had been as high as from 5 to 8 per cent. No general discussion of the paper took place, owing to the lateness of the hour. But the upshot of the whole matter was that Professor Brill's disease may in all probability be set down as an unusually mild and benign form of typhus fever.

(To be continued)

PARIS LETTER

(From Our Regular Correspondent)

PARIS, Aug. 1, 1913.

Fraud in Connection with Industrial Accidents

I have spoken of the disgraceful behavior of certain "clinics" for industrial accidents, which have tried in all sorts of ways to get hold of injured working men. The Committee of the Chamber of Deputies on Insurance and Social Welfare has taken up the matter. It decided to introduce the following clause into the bill relating to occupational diseases which is now under discussion: "Any one who by threats, gifts, promises of money, rebate on medical fees or charges for druggist's supplies, made in industrial accidents to syndicates or companies or heads of business enterprises or insurance companies, or any other person, has enticed or attempted to entice the victims of industrial accidents or occupational diseases into any clinic or doctor's office or drug-store and thus has limited or attempted to limit the freedom of the workman in choosing his physician or druggist, shall be subject to a fine of from 100 to 500 francs (about $20 to $100) and to an imprisonment of three days to three months."

Nurses in Religious Orders and Hospital Services

About a year and a half ago (THE JOURNAL, Jan. 27, 1912, p. 289) I mentioned the commotion caused in the medical profession by the decision of the government requiring the substitution of lay nurses for the sisters of the Order of St. Martha in the sanatorium at Périgueux. The Union des Syndicats médicaux de France joined with the physicians of Dordogne in protesting to the government against interference with the free choice of the staff in private clinics and urged the medical representatives in parliament to present a bill on the subject. The Association générale des médecins de France also committed itself to the same point of view. In the hospitals belonging to the city and general government, moreover, there has been an increasing sentiment lately against laicization. The mayor of Marseilles recently received a delegation which presented a petition signed by more than 130,000 persons, demanding the restoration of the members of religious orders in the municipal hospitals there. A municipal councilor of Paris, M. de Puymaigre, has proposed the admission of members of religious orders to the hospitals of the city of Paris and the department of the Seine on the grounds of the difficulty of obtaining lay nurses for the slender salaries offered. Even if the lay staff is retained, the hospitals ought not to be deprived of the service of the religious orders, which is the more desirable because the sisters are content with a very modest salary. Some hospitals might be served by members of religious orders and others by lay nurses, so that the patient might have his choice of nurses. The Syndicat médical de Paris and the Syndicat des médecins de la Seine have approved the proposal. At Grenoble a petition for the restoration of the sisters, bearing 25,000 signatures, has been rejected by the board of administration of the hospitals of that city, which declares itself quite satisfied with the lay nurses, to whose good qualities the board bears testimony.

The Sale of Drugs by Midwives

A midwife at Saulnes was arrested for abortion. Her house was searched and various drugs were found in it. She was acquitted of illegal practice of pharmacy on the ground that the law permits physicians or officers of health to keep drugs in localities where there is no drugstore. Thus the court admitted that midwives were officers of health. The court of appeals at Nancy has reversed the judgment and fined the midwife $100 (500 francs) on the ground that midwives, being licensed to practice only their own specialty, are not officers of health and therefore can handle only drugs necessary for his specialty.

Death of Professor Coyne

The death of Dr. Paul Coyne, former professor in the Faculté de médecine de Bordeaux and national correspondent of the Académie de médecine, is reported.

BERLIN LETTER

(From Our Regular Correspondent)

BERLIN, July 25, 1913.

Municipal Purchase of Mesothorium

On favorable reports as to the therapeutic effects of mesothorium in cancer, the communal authorities of Essen have determined to purchase 200 mg. of the preparation. Half of the necessary sum, $10,000 (40,000 marks), has been raised by private subscription and the rest has been appropriated by the communal authorities.

Colonial Prizes

The well-known wholesale merchant, Woermann of Hamburg, whose father had a great share in the founding of the first German-African colony, has offered the faculty of the Colonial Institute at Hamburg $1,500 (6,000 marks) as a prize for the best discussion of the question, "By what practical means can an increase of the birth-rate and a reduction of the infant mortality among the native colored population—the most important economic factor of the colonies—be secured?" In addition to the medical aspects of the question, the work must include consideration of the religious, ethnographic and economic relations which may influence the birth-rate and infant mortality among the natives of the colonies, and in addition must include practical suggestions for increasing the birth-rate and reducing the infant mortality among the native colored population. The investigation need not be extended to all of the protected districts. Articles which are confined to one district may be admitted for competition. The articles must be written in the German language, and reach the faculty of the Colonial Institute at Hamburg, Dec. 31, 1914, at the latest.

International Health Office in Jerusalem

An international health bureau has been founded at Jerusalem by the German Society for combating malaria in Jerusalem (*Deutsche Gesellschaft zur Bekämpfung der Malaria in Jerusalem*), the Jewish health office (Nathan Straus foundation), and an association of Jewish physicians and sanitarians (*Gesellschaft jüdischer Aerzte und Naturwissenschaftler für sanitäre Interessen*). Departments are provided for malaria, for hygiene, a serologic and Pasteur antirabic institute, and a bacteriologic and tuberculous department. Professor Mühlens is director of the health office.

International Conference on Tuberculosis

The International Conference on Tuberculosis will occur in Berlin, October 22-25, with Bourgeois of Paris as president. With it there will be two weeks of educational trips for information in hygiene of which one will be to Munich, Nurnberg, Heidelberg, Baden-Baden, Frankfort and Giessen, and the other to Düsseldorf, München-Gladbach, Leverkusen, Essen, Hamburg and Berlin. Those intending to be present should send announcements to the general secretary, Professor Pannwirt, 12 Schönebergerufer, Berlin.

VIENNA LETTER

(From Our Regular Correspondent)

VIENNA, Aug. 5, 1913.

Professor His Refuses to Come to Vienna

Professor His, who was asked to accept the appointment of director of the medical clinic as successor of von Noorden, has decided to decline the honor. The reasons given by him—disinclination of the family—are surely not the only ones, and there must be something else which causes so many eminent scientists—Strümpell, von Noorden, Abderhalden, His—to refuse to come here, since a call to Vienna was once regarded as the highest honor. The trend of opinion now among the faculty is that an inland man ought to be called; but since some of the most eminent candidates are Jews or come from Jewish stock the religious prejudices here will not permit their being appointed. Therefore the number of inland men fit to accept such a call is very small indeed, from racial and religious points of view.

Small-Pox Mortality in Austria Since 1886

Statistical data dealing with the mortality from small-pox are available for Austria since about 1886, when practically compulsory vaccination was introduced with the effect that within a few years the overwhelming majority of the population (about 85 per cent.) were vaccinated; and now more than 98 per cent. of the population have been vaccinated at least once during their life. The results are clearly visible in the returns of the mortality tables of the Registrar General. In the year 1886 10,163 persons died in Austria from small-pox, or 434 per million inhabitants. The average mortality from this source in the five years (1891-1895) following the first lustrum was 4,484 per year, or 180 per million, meaning a drop to less than a half of the original figures. The next five years averaged only 1,427 deaths per year, or 60 per million (one third of the figure stated for the preceding period). A still more rapid fall is noted in the next five years (1901-1905), averaging 36 deaths, or 13 per million. The figures for 1906 were 39 deaths; for 1907, 41; for 1908, 14 deaths; for 1909, 13, and for 1910, 5, averaging for these five years 22 deaths annually, or 0.8 per million of inhabitants. If we compare these figures with the data obtained for instance from Great Britain, we find the most instructive fact that there occurred three epidemics of small-pox in the United Kingdom within this period (1887-1888, 1893-1894 and 1902-1904). The last-mentioned epidemic alone claimed 4,731 victims, and the explanation is to be found in the fact that numerous persons availed themselves of the opportunity offered them by the law by declaring their "conscientious objection" against vaccination and thus being exempt from compulsion to submit to it. In Austria, on the other hand, most of the younger generation of doctors have not seen a real small-pox case except in pictures of a dermatologic atlas. Only in seaports where now and then an imported case is brought into the quarantine hospital do we occasionally receive instruction of this kind. The cases observed inland within the last few years were all traced to Turkey and Italy, whence travelers had come hither already infected.

The War and the Cholera in the Balkans

The new Balkan War has again caused an outbreak of cholera in the war district, and the wounded soldiers being sent home or into the rear hospitals have spread the disease all over the fighting countries. Especially in Servia and Bulgaria there are numerous cases, although they are officially not known. One of the most fruitful sources of infection seems to be the abundance of flies; at least all soldiers and war correspondents are convinced of it, even if the scientific proof has not yet been obtained. Myriads of flies feed on the heaps of corpses of the slain of those who have died from cholera and remained unburied for days, and they multiply and infest everything in the fearful heat raging in the Balkans just now. Reports from the new Red Cross missions always point out the calamity encountered by the multitude of flies. Stringent precautions have been taken on the Austrian frontier to guard against the entrance of cholera. The wet, cool weather prevailing in central Europe has assisted the officers of the boards of health in the endeavor to keep the disease out hitherto.

The Danger of Whooping-Cough and Other Infectious Diseases

Statistics regarding the fatal cases of whooping-cough, compared with the mortality of scarlatina, measles and diphtheria, show the startling fact that the first-named disease twenty years ago was more dangerous than even scarlet fever, and that now it still is worse than diphtheria. The following figures are taken from the official report of the Austrian Board of Health and published by Dr. Langer in the *Oesterreichische Sanitätswesen* for 1913, No. 21.

REPORTED FATAL CASES IN AUSTRIA

Year	Whooping-Cough	Scarlatina	Measles	Diphtheria
1890	27,274	12,158	15,182	28,514
1908	8,714	14,366	7,929	7,924

In these figures the numerous deaths due to complications of whooping-cough are not considered. Special attention should therefore be paid to this dangerous disease, as not so much change of air as pure air alone is necessary for the cure of the attacks.

Marriages

WARD BOLEYN MACCAFFRY, M.D., U. S. P. H. S., Fort Monroe, Va., to Miss Laura Garside Stott of Philadelphia, in New York City, July 9.

JOHN W. ELDER, M.D., Des Moines, Ia., to Miss Ethel Eleanor Chamberlin of Adel, Ia., at Des Moines, August 8.

CHARLES JOHN BOEHS, M.D., M.R.C., U. S. A., to Miss Hattie Collier of Houston, Tex., at San Francisco, July 31.

THOMAS JOHN EMBERTON HOLMES, M.D., Paterson, N. J., to Miss Martha M. La Paugh of Port Jarvis, N. Y., June 9.

HERBERT EDWIN WILKINSON, M.D., to Miss Pheby St. Thomas, both of Eagle Lake, Minn., August 4.

CLAUDE GRANVILLE CRANE, M.D., to Miss Elizabeth K. Thistle, both of Brooklyn, N. Y., August 7.

LOUIS JOHN KAUFFMANN, M.D., Millville, N. J., to Miss Maria G. Keenan of Philadelphia, August 6.

ALVAH LEWIS SAWYER, M.D., Chicago, to Miss Marion L. Messer of Beloit, Wis., June 21.

EDWARD J. DEIBERT, M.D., to Miss Flora E. Bader, both of Hillerton, Pa., August 5.

ALLAN MCNALLY, M.D., to Miss Ida L. Sanaman, both of Louisville, August 2.

Deaths

Alfred Watt, M.D. University of Toronto, Ont., 1890; superintendent of the Government Quarantine Station at William Head, B. C.; is said to have committed suicide July 27 by leaping from the third story window of a hospital in Seattle.

Ezekiel Y. Salmon, M.D. University of Nashville, Tenn., 1857; surgeon in the Confederate Service during the Civil War and later a practitioner of Nashville and Lynchburg, Tenn.; died at his home in the latter city, July 8, aged 83.

Giovanni C. D. Caruso, M.D. Royal University of Naples, 1888; a fellow of the American Medical Association; who had devoted much attention to hygiene; died at his home in Cleveland, June 27, from cerebral hemorrhage, aged 52.

John Baker Swift, M.D. Harvard Medical School, 1877; a member of the Massachusetts Medical Society; for one year port physician of Boston; gynecologist to Carney Hospital; died at his home in Boston, July 29, aged 59.

Ruth A. French, M.D. Woman's Medical College of Pennsylvania, Philadelphia, 1867; at one time professor of anatomy in her alma mater; formerly of Petaluma, Cal.; died at her home in Santiago, June 23, aged 74.

Emma E. Richards, M.D. Woman's Medical College of Pennsylvania, Philadelphia, 1886; for three years school director of Norristown, Pa.; died in her home at Wyomissing, Pa., July 31, from neurasthenia, aged 63.

Anson Cordian Smith (license, Minn., 1887); of Cleveland and Eagle Lake, Minn.; a practitioner for more than half a century; a veteran of the Civil War; died at the home of his son in Eagle Lake, July 20, aged 79.

Robert Henry Bigger, M.D. University of Victoria College, Coburg, Ont., 1866; for twenty-seven years a practitioner of Indianapolis, and later of Carrollton and Mount Vernon, Ill.; died in Los Angeles, July 27.

David Shoemaker, M.D. Cooper Medical College, San Francisco, 1891; a member of the Medical Society of the State of California; died suddenly at his home in Auburn, Cal., July 19, from heart disease, aged 48.

J. Benjamin Jones (license, South Carolina, years of practice); a practitioner since 1879; for many years a practitioner of Laurens, S. C.; died at the home of his nephew in Greenville, S. C., July 19, aged 57.

William Edward Alumbaugh, M. D. Hahnemann Medical College of the Pacific, San Francisco, 1889; formerly of Watsonville, Cal.; died at his home in Napa, Cal., July 6, from arteriosclerosis, aged 76.

George Victor Winter, M.D. Northwestern University Medical School, Chicago, 1911; of Albany, Minn.; died in a hospital in St. Paul, July 29, a week after an operation for appendicitis, aged 33.

Harvey Allen Snyder, M.D. Cleveland Homeopathic Medical College 1904; at one time a member of the Barberton (O.) school board; died at his home in that city, July 31, from pneumonia, aged 44.

Bernard Aloysius Duhigg, M.D. Long Island College Hospital, Brooklyn, 1894; formerly of Bath Beach, Brooklyn, N. Y.; died at the residence of his brother at St. James, L. I., July 29, aged 41.

Edward Francis Dowd, M.D. Harvard Medical School, 1898; famous while in college as a baseball pitcher; died at his home in Waltham, Mass., from pneumonia, July 26, aged 38.

David Howland Cannon, M.D. Harvard Medical School, 1873; for many years chairman of the Mattapoisett (Mass.) Board of Health; died at his home in that place, July 2, aged 69.

James J. Burch, M.D. Medical College of Georgia, Augusta, 1893; of Double Branches, Ga.; died suddenly in Elberton, Ga., July 22, from cerebral hemorrhage, aged 50.

George Porterfield Morrison, M.D. New York University, New York City, 1881; died at his home in Martinsburg, W. Va., July 24, from cerebral hemorrhage aged 59.

Walter A. Reynard, M.D. Georgetown University, Washington, D. C., 1907; died at his home in Stamford, Conn., July 30, from ptomain poisoning, aged 27.

Ira L. Jones, M.D. University of Buffalo, N. Y., 1864; one of the oldest practitioners of Oswego County, N. Y.; died at his home in Minetto, July 30, aged 81.

Henry V. Worley, M.D. Rush Medical College, 1880; an early settler of Pierce City, Mo.; died at the home of his daughter in that city, July 31, aged 62.

Hutcheson James Nash, M.D. University of Toronto, Ont., 1861; medical officer of health for Forest, Ont.; died at his home in that place, May 17, aged 67.

Samuel S. Boyer, M.D. Jefferson Medical College, 1864; a surgeon of volunteers during the Civil War; died at his home in Washington, D. C., aged 76.

Fred M. Klussman, M.D. Kentucky School of Medicine, Louisville, 1897; died in his apartment in Spokane, Wash., July 21, from heart disease, aged 38.

Neil McIntyre, M.D. University of Toronto, Ont., 1886; of Phoenix, Ariz.; died at his summer home in LaJolla, Cal., July 26, aged 71.

Eliza M. Miller, M.D. Hahnemann Medical College, Chicago, 1886; died at her home in Los Angeles, July 6, from paralysis, aged 75.

Hamilton W. Dimmitt, M.D. Medical College of Ohio, Cincinnati, 1888; died at his home in Germantown, Ky., July 17, aged 46.

Thomas Henry Stark, M.D. Trinity Medical College, Toronto, 1881; died at his home in Toronto, June 9, from angina pectoris.

Adolph Moeller, M.D. Rush Medical College, 1888; formerly of Milwaukee; died in Alhambra, Cal., July 27, aged 53.

Jerrold D. Ball, M.D. University of Toronto, Ont., 1874; died recently at his home in Toronto

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

SOME MISCELLANEOUS NOSTRUMS

Himalya; the Kola Compound

Though advertised as "Nature's Great Specific for the Cure of Asthma," the chemists of the North Dakota Agricultural Experiment Station reported "Himalya, the Kola Compound" to be "a weak hydro-alcoholic solution of potassium iodid, flavored with peppermint and licorice and colored with caramel." While the name would indicate that the active ingredient of the stuff was kola, the chemists stated that "little, if any, kola enters into the preparation." The preparation contains more than 9 per cent. alcohol, yet the exploiters recommend it to be taken with whisky! The stuff was sold for $2 a bottle; "it could be prepared," according to the North Dakota chemists, "by the average pharmacist for, say, about a dime."

Mrs. Bradley's Face Bleach

The claims made for this stuff, which emanates from Minneapolis, are that it "removes moth, tan, freckles, pimples, blackheads, prevents wrinkles, oiliness and aging of the skin." What else it does is left to the seeker after beauty to learn by experience. Its ingredients were reported by the North Dakota Government Agricultural Experiment Station to be Epsom salts (magnesium sulphate) and corrosive sublimate (mercuric chlorid). A more detailed analysis appeared in the *Druggists' Circular*, March, 1913:

Anhydrous magnesium sulphate	45.7 per cent.
Sodium chlorid (common salt)	9.7 per cent.
Mercuric chlorid (corrosive sublimate)	23.6 per cent.
Water	23 per cent.

Dr. T. Felix Gouraud's Oriental Cream or Magical Beautifier

As long ago as 1907, Dr. T. Felix Gouraud's Oriental Cream or Magical Beautifier was analyzed by the state chemists of New Hampshire, who reported that it consisted of "approximately one-half ounce of calomel suspended in a short half-pint of water." More recently—in 1912—it has been analyzed by the chemists of the Connecticut Agricultural Experiment Station, whose report is practically identical with that of the New Hampshire chemists. Some of the claims made for this simple mixture are:

"Purifies as well as beautifies the skin. No other cosmetic will do it."

"Removes tan, pimples, freckles, moth patches, rash and skin diseases and every blemish on beauty and defies detection."

An eight-ounce bottle of this preparation costs 98 cents. As the Connecticut chemists say: "The amount of calomel in a bottle of this substance can be bought at retail for about 6 cents; the remaining 92 cents is the charge for a half-pint of water."

Cat-Er-No "Soules"

On this article, which is said to be made by the Soule Medical Company, Minneapolis, the chemists of the North Dakota Experiment Station reported: "Sample was an aqueous solution of menthol with just enough of a vegetable drug present to give it a color. There was less than 0.1 of 1 per cent. of total solids. Sample would be of little value as a catarrh cure."

Ely's Liquid Cream Balm

This preparation, which is sold as a "remedy for catarrh, catarrhal deafness, hay fever, cold in the head," is a pinkish liquid having the odor of thymol and menthol. It was analyzed by the chemists of the Connecticut Agricultural Experiment Station, who reported that it "appears to consist essentially of liquid petrolatum with small quantities of thymol and menthol." The chemists further asserted that a bottle of

Ely's Liquid Cream Balm costing 69 cents contains about half a cent's worth of liquid petrolatum.

Dr. Boskano's Cough and Lung Syrup

Still another "new remedy for the positive cure of consumption, coughs, colds, etc." As long ago as 1908 the Kansas State Board of Health showed this remedy to be misbranded, describing it as "a saccharin solution of expectorant drugs with tar and chloroform." In 1911 it was analyzed by the chemists of the North Dakota Agricultural Experiment Station, who reported that it "appears to be made from an inferior grade of honey, syrup of tar, chloroform, alcohol and morphin." The analyst noted that practically all the morphin was found not in the solution but in the sediment which was deposited on the sides and bottom of the bottle; yet the mixture was put up without a "shake" label! He concludes, "The dead fly found in the liquid could scarcely merit the 'hearty approval of all physicians and medical experts' which is claimed in the circular accompanying this remedy."

Véritable Grains de Santé du Docteur Franck

Since the beginning of the nineteenth century, according to the descriptive leaflet, these "Grains of Health" have been preventing "typhoid congestions," and various other woes which arise from impaired intestinal functions. Their value is defined as "stomachic and laxative, depurgative, purgative and antiseptic." The "grains" were examined by the chemists of the Connecticut Agricultural Experiment Station, 1912, who reported that the pills appeared to be essentially aloes and cost at the rate of $33.19 a pound.

Dr. Bloomer's Catarrh Remedy

This preparation, hailing from Altoona, Ga., comes in cigarette form. Analyzed by the chemists of the North Dakota Agricultural Experiment Station it was reported to contain "chamomile flowers over 50 per cent., powdered cubeb, fennel seed and a few other powdered vegetable substances."

Schenck's Pulmonic Syrup

A sample of this "seventy-year-old Standard Remedy for Consumption, Coughs, Colds, Diseases of the Lungs and Respiratory Organs," was analyzed by the chemists of the Connecticut Agricultural Experiment Station, who reported: "This remarkable remedy for consumption is essentially a winter-green-flavored mixture of saccharin syrups, 96.4 per cent. of the solids consisting of sugars. It is hard to believe that the virtue of this material rests in the 2.7 per cent. of undetermined solids (possibly vinegar of squills). It is recognized that a rich and nutritious diet is essential in the treatment of consumption, and it is true that this substance, with nearly 73 per cent. of sugar, is highly nutritious, and yet one can scarcely recommend the purchase of such a preparation at the rate of $2.50 a quart, when molasses is obtainable at 50 to 60 cents a gallon."

Dr. J. H. McLean's Tar Wine Lung Balsam

"Will cure coughs, colds, bronchitis, consumption, asthma, throat and lung troubles," read the label; but, according to state chemists of North Dakota, analysis of this preparation would indicate that it "is nothing but a weak syrup of tar, containing about 15 per cent. by volume of ethyl alcohol." The examination is also reported to have shown that "the base of the preparation is not wine, as the label would lead one to believe." The report closes: "Thus the remedial agents in this preparation which 'will cure consumption,' etc., are sugar and alcohol."

Dr. Gun's Pain Expeller

This product, which is said to be prepared by C. W. Beggs Manufacturing Co., Chicago, was declared misbranded by the Colorado State Board of Health in 1909. One of the reasons for this action on the part of the Colorado officials was that the stuff was labeled "free from any dangerous ingredients," when, as a matter of fact, it contained opium. The product was again examined by the chemists of the North Dakota Agricultural Experiment Station, who reported in 1911 that two bottles of the preparation, bought in different parts of the state, showed variation in the proportions of the ingredients. The product was found to contain alcohol varying in amount between 50 and 60 per cent. and to have from 1 1/5 to 1 3/4 grains of opium to the ounce, while the presence of camphor and capsicum was determined.

Correspondence

Origin of the Sign Which Stands for Recipe

To the Editor:—In view of the general interest in the question of the origin of the sign placed at the head of a prescription, I wish to put before the readers of THE JOURNAL an opinion which I have obtained from O. F. Long, professor of Latin, Northwestern University. The following correspondence will make the matter clear.

HUGH MCGUIGAN, M.D., Chicago.

DEAR PROFESSOR LONG:

A prescription commences with the symbol ℞, representing the Latin word *recipe*. The origin of the ligature is a source of discussion and confusion to many. Most books on prescription-writing state that in ancient times it was the custom to preface a prescription with a pious invocation to Jupiter, or some guardian deity. The prayers finally became abbreviated until they were expressed by ♃, the astronomical sign for Jupiter. The ligature or stroke across the letter R, which heads the modern prescription, is said to be a relic of this heathen custom.

Is there any basis for this teaching? Some recent writers state that it is merely a sign of abbreviation used by writers of Latin manuscripts. Very few, if any, medical writers are qualified to pass an opinion on this subject; if therefore it does not involve too much time on your part, I should like to have your opinion on it.

HUGH MCGUIGAN.

DEAR DR. MCGUIGAN:

The abbreviations used in Latin manuscripts go back, of course, to various origins, and various methods are used. There is an ancient system of shorthand writing known as Notae Tironianae which is responsible for some of the kinds of abbreviations used. The particular abbreviation represented by this ligature is not uncommon for various endings, as the following words may illustrate:

Word	Abbreviation
Feria	ℱ
Illorum	illoꝝ
Accipe	accꝑ
Rerum	reꝝ
Anus	anꝰ
Sarisburia	Sarꝭ

In the "Dizionario di Abbreviature latine ed italiane," by Adriano Cappelli, published at Milan, second edition, 1912, there are various abbreviations reported from Latin manuscripts that illustrate these points, and I select from pp. 322 and 323 the following that will be of particular interest in this connection:

Word	Abbreviation
Respondere	℟ sp
Reverendo Domino	℟ D
Rubrica	℟ ca
Reverendi	℟ ri

The exact word which we are after, "recipe," is abbreviated on p. 323 as follows, Rec, and is noted as a medical term. You will see that here the ligature is not used. This is precisely what we find to be the case in all of these abbreviations under the letter R, regardless of the meaning of the word. Sometimes the stroke is put across the tail of the R, and sometimes not. I do not believe that the facts afford any basis for the theory of an invocation to Jupiter.

O. F. LONG.

The Cross-Roads Surgeon

To the Editor:—I have been very much interested in the discussion of the paper on "Posterior Gastrojejunostomy in Acute Perforative Ulcer of the Stomach and Duodenum," presented by Dr. John B. Deaver at the Minneapolis meeting of the American Medical Association. While I fully realize the necessity of emphasizing the responsibility assumed in attempting to operate in cases of this character, I regret the somewhat personal character of the discussion when reference was made to cross-roads surgeons. Less than a century ago the superstition was prevalent that all major operations must of necessity be performed in a hospital ward; later, that a celiotomy must of necessity go to Philadelphia; and subsequent to this, that only large cities and extraordinarily well-equipped hospitals could be used for performing these grave operations. However, modern surgery of the best and most successful type is being done by these cross-roads surgeons who are criticized in this discussion.

The statement that great operations should be performed only by those surgeons who have spent much time in fitting themselves for this work sounds very well, but where can a surgeon qualify if he does not develop the resources at hand? And what will the public do when all those now fitted to perform these operations are dead?

The gist of the discussion, with which I fully agree, is that anyone who undertakes operations of this character must be honest with himself and must have sound judgment, which he should carefully exercise in the interest of his patients. Many of the so-called cross-roads surgeons have this quality, and are honestly working in the best interest of their patients, while they are developing with the experience that comes to them. The point I would make is that not all physicians of ability live in the city, there are some at the cross-roads.

PAUL PENISTON, M.D., Newnan, Ga.

Need for Inexpensive Obstetric Nurses

To the Editor:—Something should be done to enable women of scanty means to receive decent care during confinement. Everything is being done in the way of intelligent care for the women who are giving birth to illegitimate children. This is as it should be, for although it is a stain on the woman's virtue, she is not so vile as the married woman who murders her offspring in her womb. The honest wife of the working man has to "grunt and sweat under her heavy load" and if she dies for want of care the blame is unjustly placed on Providence. Trained nurses cannot be obtained for the wife of the working man because the mainstay of the family cannot pay the price. There should be training schools for women who would devote their work to taking care of the working man's wife, during confinement, at a reasonable charge. The time for such study should not be longer than six months and the work taken up by widows or women over 30 years of age. Giving birth to a child is purely physiologic. In the greater number of cases a thorough knowledge of cleanliness is all that is necessary. Nowadays if the wife of the working man receives the necessary care she is saddled with a load of debt, so that her husband looks on his wife's pregnancy as a domestic calamity. In no other condition is common sense, combined with intelligent skill, so necessary. Less pawing and mauling of the woman is desirable. Meddlesome interference has laid many a woman in the cold ground. Six months' training for nurses in a lying-in hospital is sufficient for such work. The honest wife of the poor man should receive at least the same care as her erring sister. E. T. MILLIGAN, M.D., Detroit.

A Ratless Utopia.—A ratless country seems almost utopian, but much can be accomplished in preventing the unnecessary loss and in safeguarding the country from any possible plague invasion, by a concerted and well-sustained nation-wide crusade against the rat, similar to the "swat the fly campaign." No sporadic or individual effort will suffice.—R. H. Creel, *Pub. Health Rep.*

Medical Economics

THIS DEPARTMENT EMBODIES THE SUBJECTS OF POST-GRADUATE WORK, CONTRACT PRACTICE, LEGISLATION, MEDICAL DEFENSE, AND OTHER MEDICOLEGAL AND ECONOMIC QUESTIONS OF INTEREST TO PHYSICIANS

CONTROL OF CANCER

The American Society for the Control of Cancer is a recently organized body, consisting of both laymen and physicians. Its object is the education of the public on the controllability of cancer through early diagnosis and operation. Mr. George C. Clark of New York is president, Mr. Thomas M. Debevoise, 62 Cedar Street, New York, is secretary, and Dr. Clement Cleveland of New York is chairman of the executive committee. The society has recently issued a statement to the press, setting forth its aims and plans, from which the following is abstracted:

It has long been known that cancer was one of the most frequent causes of death, but only in recent years have data been available to prove the frequency of the disease and its high place in the mortality of the human race.

In a recent paper before the American Gynecological Society, an eminent authority—a statistician of a great insurance company—brought together in the most convincing way the statistical evidence, not only of the frequency of cancer, but of its increasing frequency. From these figures it would seem that at ages over 40 cancer is a greater menace to human life than tuberculosis.

The many agencies which have been working for years to protect the health of the people have undoubtedly increased the probability of a longer life. This, in itself, increases the chances of cancer. During the last few years there have been efforts to educate the medical profession and the public as to the frequency of cancer and as to its greater curability when recognized early and properly treated. The American Medical Association appointed, some years ago, active committees on public health and education, and one of these had a subcommittee whose function it has been to deal with the question of cancer. Other medical associations have also appointed special committees to investigate the problem of the best method of educating the public and the medical profession.

In the spring of this year a number of lay women and men, with the advice and encouragement of members of the medical profession, conceived the idea of a national association for the control of cancer. This association has now been established. Its incorporate name has been selected—the American Society for the Control of Cancer. The word "control" was employed because the world should know that the medical profession has accumulated the facts which will prove that the menace of cancer can be controlled. At the recent meeting of the American Medical Association a resolution was unanimously adopted endorsing the organization and objects of the American Association for the Control of Cancer. There seems little doubt that every medical society will do likewise.

This beginning is but a small part of the great and difficult work before the new association. At present the facts well established in regard to cancer are not known by the people or even by the great body of the medical profession. They must be presented in such a way that there shall be no doubt in regard to their authenticity and truth. The conclusions must be those agreed on by the great majority of those who have for years studied the problem of cancer and accumulated this evidence. The truth must be presented to the people in such a way that it will not create fear, but confidence. The message to the medical profession will be equally difficult. The diagnosis of cancer in its earliest stages, when treatment gives the best results, is more uncertain, and the treatment in this stage, although less dangerous, is a more delicate surgical procedure.

Less thought has been given to the practical treatment of the cancer problem than to any other of the great problems of public health. Few have known of the great menace of cancer as compared with tuberculosis and typhoid fever, or of the number of cures of cancer in its later stages. Fewer have known of the tremendous possibilities of increasing the number of cures when cancer is recognized and properly treated in its earliest stages. Evidence seems to prove that the control of cancer is simply a problem of education.

Millions have been expended for the investigation of the cause of cancer. Little if any money has been given to investigate the clinical facts in regard to this disease. The evidence of the number of cures of cancer which have been accomplished by surgery has been obtained by different surgeons and clinics working independently. It is this evidence that allows the new association to start its propaganda of education and give its message of assurance to the people. This association needs the help of the public press and of writers to put in simple and clear English the message to the people. Those who control the press should discourage the publication of untruthful or misleading articles. The publications to be given the public represent no single individual or institution, but a uniformity of opinion based on experience. It is for those who can afford to help, to judge whether such a movement along these lines justifies financial aid. The work cannot be done without money, and labor which cannot be purchased with money.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

COMPARATIVE STATISTICS OF ILLEGITIMACY

To the Editor:—Please give comparative statistics of illegitimacy in France and other countries.

P. J. CRESS, M.D., Ellsworth, Minn.

ANSWER.—The Encyclopedia Britannica (edition 1910) gives the illegitimate births per thousand births, excluding still-born during the period 1901 to 1905 as follows:

England and Wales	40
Scotland	64
Ireland	26
Denmark	101
Norway	101
Sweden	101
Germany	84
France	88
Italy	56

The same article says the statistics for the United States are so incomplete that it is thought best not to give them.

The following references will undoubtedly be of service:

Illegitimacy from the Social Standpoint, Berlin Letter, THE JOURNAL, Dec. 17, 1910, p. 2166 (gives statistics of several countries—not France).

Livy, A.: De la mortalité des enfants illégitimes; des causes, des remèdes d'ordre legislatif, leur portée, *Rev philanthrop.*, 1911, xxix, 304.

Menzler: Kinder von Verlobten, *Sex.-Prob.*, 1911, vii, pp. 1-10.

Meyer, B.: Mit dem unehelichen Vater nicht verwandt, *Sex.-Prob.*, 1911, vii, 511.

Keller, A.: Referat über die Fürsorge für uneheliche Kinder, *Verhandl. d. Versamml. d. Gesellsch. f. Kinderh., deutsch, Naturf. u. Aerzte*, 1908, xxv, p. 209.

Die Stellung der unehelichen Kinder auf dem Lande, *Ztschr. f. Med.-Beamte*, 1911, xxiv, 760.

We may call attention also to the special journal *Sexual-Probleme*, published monthly by J. D. Sauerlander, Frankfort-on-the-Main, Germany.

LACTOBACILLINE LIQUIDE

To the Editor:—1. Is it true that Lactobacilline Liquide manufactured by the Franco-American Ferment Co., is superior in its effects to other preparations of lactic acid bacilli put on the market by other firms? 2. Is the claim that Metchnikoff supervises their preparations in any way, true? C. M. D., Spokane, Wash.

ANSWER.—1. Lactobacilline Liquide has not been submitted to the Council on Pharmacy and Chemistry by its exploiters and we know of no investigation of the claims by competent investigators. Some years ago P. G. Heinemann[1] examined this firm's product as sold in the form of powder and tablets. The tablets contained *Bacillus bulgaricus*, *Streptococcus lacticus*, an acid-forming strain of staphylococcus, *B. subtilis* and a yeast. Boiled milk after inoculation showed *S. lacticus* in overwhelming numbers and large numbers of a yeast cell. *B. bulgaricus* was in relatively small numbers.

In commenting on Dr. Heinemann's investigation THE JOURNAL noted that Lactobacilline was claimed to be prepared according to Metchnikoff's directions, but while Metchnikoff states that yeast should be absent, as its presence encourages pathogenic bacteria in the digestive tract, the investigation of Heinemann showed Lactobacilline to contain a yeast.

Sewerin[2] also failed to find *B. bulgaricus* in Lactobacilline.

From these examinations the claims of the manufacturer should be viewed with suspicion.

2. We have no information on this point. THE JOURNAL has prepared a reprint of articles dealing with lactic acid ferments, which also contains the descriptions of lactic acid products included in New and Nonofficial Remedies. This reprint will be sent on receipt of a two-cent stamp.

1. THE JOURNAL A. M. A., Jan. 30, 1909, p. 372 and 397.

2. THE JOURNAL A. M. A., April 27, 1912, p. 1252.

ROSS-JONES CEREBROSPINAL TEST

To the Editor:—Please describe the technic of the Ross-Jones cerebrospinal test. F. L. WALDORF, Eastwood, N. Y.

ANSWER.—The technic of this test is given by Ross and Jones in the *British Medical Journal*, 1909, i, 1111, as follows: 2 c.c. of a saturated solution of ammonium sulphate are placed in a test-tube and 1 c.c. of the cerebrospinal fluid is gently run on to the surface in the way done in Heller's nitric acid test for albumin. The formation of a ring at the junction of the two liquids constitutes a positive reaction. The ring is clear-cut, thin, grayish-white, and has the thickness of a thin piece of paper. It should form within three minutes and within half an hour it may be observed that the surface of the ring shows a delicate mesh appearance resembling a fine cobweb. Indirect illumination must be used or it may escape detection. It may be best observed in a black-lined box illuminated by an electric bulb. The ammonium sulphate must be pure and the solution saturated.

TREATMENT OF TAPEWORM

To the Editor:—Please tell me in detail how to administer male-fern in the treatment of tapeworm, giving preparations, dosage and manner of administration for adults and children. Also dosage and manner of administering pelletierin tannate. J. M. C.

ANSWER.—We refer our correspondent to the article on tapeworm in the last edition (third) of the "Handbook of Therapy," p. 287, which thoroughly describes the male-fern and other treatments, or to THE JOURNAL for March 18, 1911, p. 813, where the article originally appeared.

TO RIPEN STAINS RAPIDLY

To the Editor:—Apropos of the method of ripening stains rapidly, suggested in THE JOURNAL, July 5, 1913, p. 26, if one has an oxygen tank handy the quickest and most economical way is to attach a small rubber tube with glass pipet, then allow oxygen to bubble through the solution for some minutes, ten to thirty. This will be found very satisfactory. Silver oxid is all right, but the expense is an item when many different stains have to be made.

J. E. HUBER, Peoria, Ill.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Archives of Pediatrics, New York

July, XXX, No. 7, pp. 481-560

1 *Classification of Summer Diarrheas in Infancy. H. Koplik, New York.
2 *Care of Dependent Infants in Baltimore. J. H. M. Knox and H. M. Thomas, Baltimore.
3 Wet Nursing of Foundlings. W. E. Lee, Philadelphia.
4 What Can Be Done to Prevent Milk Poisoning. W. N. Bradley, Philadelphia.
5 *Some Clinical Experiences with Bacillus Bulgaricus in Acute Gastro-Enteritis and Ileocolitis. J. F. Sinclair, Philadelphia.
6 Infantile Diarrhea Caused by Fresh Alfalfa Dairy Ration. S. Blum, San Francisco.
7 Does Teething Ever Produce Morbid Symptoms? D. J. Miller, Atlantic City, N. J.
8 Enuresis and Chronic Digestive Disturbances. F. Van Der Begert, Schenectady, N. Y.

1. Classification of Summer Diarrheas in Infancy.—Koplik reviews the different etiologic factors which serve as bases to classify diarrhea in infancy, but refuses to commit himself to any pet set of theories, because he feels that in the next ten years theories which hold the minds of students to-day must give way to more definite data when clinical, physiologic and

pathologic methods have undergone a refinement and perfection to-day unknown.

2. **Dependent Infants in Baltimore.**—Knox and Thomas investigated 519 infants from the age of 2 weeks, 365 of whom were followed throughout their first year. They conclude that 60 to 80 per cent. of workingwomen can nurse their own babies if encouraged to do so. A large majority of the bottle babies in their series were weaned unnecessarily. It is much easier for a busy housekeeper to nurse her baby than to give up the time required to properly prepare its bottle feedings. The natural method is much safer for the baby. When the mother cannot nurse her baby, she can, if she will, learn how to feed it satisfactorily on cow's milk. The authors urge that more study must be directed to the conservation of infant lives during their first three months. The epidemics in summer of gastro-intestinal diseases, and in winter of pulmonary diseases, among babies can be avoided in a large part if they are given proper care and diet. The infant mortality is, as a rule, inverse to the income of the family. Among the chief factors concerned with the large death-rate at present occurring in infancy may be mentioned continuous hot weather, paternal poverty and maternal ignorance, and the greatest of these is ignorance. Knox and Thomas strongly urge, as the result of their investigation, to meet the immediate necessities, a great increase in the instruction to mothers, by physicians and nurses, concerning the care and feeding of their infants and a better milk-supply. To save the infants of the future, they recommend a far more thorough and general education of girls in personal hygiene and household economics, including a knowledge of the fundamental requirements necessary to the healthy birth and rearing of children.

5. **Experiences with Bacillus Bulgaricus.**—Sinclair's report is based on the study of thirty-two cases in which the *Bacillus lactis bulgaricus* was administered. The ages ranged from 17 days to 2 years. There were twenty cases of gastro-enteritis and twelve cases of ileocolitis. The putrefactive process was cleared up and the stools became normal in the cases of gastro-enteritis within five days on the average. In one case the stools became green two days after the administration of *Bacillus bulgaricus* was stopped. In a second case there was no mucus in the stools after the treatment was instituted, although the baby had been ill with chronic gastro-enteritis for three months. In seven of the twelve cases of ileocolitis the putrefactive process disappeared entirely and the stools became normal within nine days on the average. Of the entire series of thirty-two cases, sixteen showed an average loss of 8⅞ ounces, and twelve showed an average gain of 6¼ ounces by the end of the first week; while the weights for four of the cases were not obtainable on account of the serious condition of the babies. Practically all who recovered showed a gratifying gain in weight on their discharge.

On admission, the babies were put on water or tea, a few later, were given barley water, albumin water, 5 per cent. dextromaltose solution, albumin water with dextromaltose added in sufficient quantity to make a 5 per cent. solution, or soy bean gruel in graduated strengths with or without the addition of dextromaltose in varying percentages up to 5 per cent. Some infants were given whey, some wine whey and others whey cream mixtures. Buttermilk conserve with and without the addition of cream, buttermilk mixtures, and casein milk were given to others. A few received malt soup, a few proprietary food, while the majority were given modified milk mixtures. Many of the modified milk mixtures were pasteurized, some were not. All were made from milk certified to by the Milk Commission of the Philadelphia Pediatric Society. In the modified milk mixtures various diluents were used, such as water, barley water, soy bean gruel and dextrinized gruels. Sodium citrate was added to some of the modified milk mixtures, and the sugar content was controlled by the use of dextromaltose. Wet-nurses were employed and breast feedings were given to those babies which seemed to especially need human milk.

The treatment used in addition to the administration of the *Bacillus lactis bulgaricus* consisted in an initial dose of castor oil, and the subsequent use of colon irrigations, or gastric lavage, with normal salt solutions, as occasion demanded. Stimulants were employed, principally brandy or champagne, when indicated, as were hot packs, cold packs, epinephrin, blood-serum, tannalbin, starch and laudanum enemas, and in two cases only bismuth subnitrate. Considering the general condition of the majority of these babies on admission to the hospital, the length of time many of them had been ill before receiving treatment, and the severity of the types of disease with which they were suffering, it seems to Sinclair that the administration of the *Bacillus lactis bulgaricus* was of decided service in controlling the putrefactive process in the intestines, and in establishing a normal condition of the stools. Although only one case of the twenty cases of gastro-enteritis could be classified as mild in type, there were only five deaths—a mortality of 25 per cent.

Bulletin of Johns Hopkins Hospital, Baltimore

August, XXIV, No. 2, pp. 85-140

9 *Carcinoma of Cervix of Uterus. H. A. Kelly and J. C. Neel, Baltimore.
10 Brief History of Methods of Resuscitation of Apparently Drowned. R. J. Cary, Pittsburgh.
11 Great Irish Clinicians of Nineteenth Century. D. Riesman, Philadelphia.

9. **Carcinoma of Cervix of Uterus.**—From a study by Kelly and Neel of the patients treated in the former's service at the Johns Hopkins Hospital since 1900 the following conclusions are drawn: The extensive abdominal removal of all uterine cervical carcinomas is justified when there is any hope of complete excision, unless there is some special contra-indication to surgical interference. This operation, if properly performed, notwithstanding the high primary mortality, has given the greatest percentage of permanent cures of any therapeutic measure thus far suggested. An exploratory operation is often necessary to determine whether or not a case is operable. Obesity is not necessarily a contra-indication to the operation, since the wide horizontal lipectomy decreases the depth of the field of operation. The preliminary catheterization of the ureters is a valuable aid, especially in fat patients, and does not necessarily increase the probability of fistulas and secondary infection of the urinary tract. Decreased cervical mobility is sometimes due to a secondary inflammatory reaction and may be improved by a thorough cauterization of the primary growth. Preliminary cauterization and disinfection of the primary growth are advisable in all cases. Extensive glandular dissection is not justified, since the increase in permanent cures does not compensate for the rise in percentage of the primary mortality. By improvements in the technic of the operation, the primary mortality has been decreased from 28.5 per cent. for the first seven years to 11.5 for the last five years. Further simplification and perfection of the details of this operation may yet reduce the primary mortality to nearly that of the ordinary laparotomy and make it more generally available. The authors conclude by stating that aside from the discovery of the etiologic factor of carcinoma of the cervix of the uterus and its successful elimination, the greatest hope lies in the early recognition of the primary growth. This can only be accomplished by a more thorough training of the family physician as to the symptoms and signs of cancer and a systematic education of the laity.

Bulletin Medical and Chirurgical Faculty of Maryland, Baltimore

July, VI, No. 1, pp. 1-22

12 Local Specific Treatment of Certain Infections. S. Flexner, New York.

Illinois Medical Journal, Chicago

August, XXIV, No. 2, pp. 85-140

13 Milk-Supply of Smaller Cities and Towns. W. W. Greaves, La Salle.
14 Rural Water-Supplies. E. Bartow, Urbana.
15 Vital Statistics and Water-Supplies. P. Hansen, Urbana.
16 Method of Obtaining Proper School Sanitation. L. Becker, Knoxville.

17 Country School Sanitation. F. G. Blair, Springfield.
18 Illinois City Tuberculosis Act. T. B. Sachs, Chicago.
19 Methods of Control of Tuberculosis. S. M. Miller, Peoria.
20 Status of Vital Statistics in Illinois and Our Obligations. T. H. D. Griffitts, Springfield.
21 Danger Signals in Suppuration of Middle Ear. J. Holinger, Chicago.
22 Intermittent Claudication, Necessitating Amputation: Two Cases. L. Feingold, Chicago.
23 Mitral Stenosis Complicating Pregnancy. S. E. Munson, Springfield.
24 *Wassermann Test. F. Baumann, Chicago.

24. **Wassermann Test.**—The Wassermann test, Baumann asserts, is not a specific reaction for syphilis, but on account of the mildness of the invader it shows up stronger in syphilis than in any other disease. But every disease that causes the appearance of disease products in the blood of the patient will for the time being also give some degree of Wassermann reaction. Experiments which he has been making force him to the conclusion that this test is, furthermore, mainly a group reaction, a non-specific group reaction, and that it is in exceptional cases only that we shall be permitted to exclude any of the factors aiding in the shaping of the final results of this reaction. One factor of the group, namely, the native antisheep "amboceptor," can be excluded from influencing the final result of the test by using an antihuman instead of an antisheep hemolytic system. A number of investigators are advocating such a change of the indicator. The amount of native antisheep amboceptor varies in different individuals, according to their surroundings, and in the same individual according to his general state of health. Syphilis as well as other diseases that depress the state of health for any length of time depresses the amount of native amboceptor. By using an antihuman hemolytic system as an indicator, there is eliminated, therefore, a symptom that may occur in other diseases, but at the same time there is excluded a symptom that does occur in syphilis. The substitution, therefore, of an antihuman indicator for an antisheep indicator deprives the test of a good deal of its sensitiveness. Comparative work with these two hemolytic indicators convinces Baumann that the exclusion of the antisheep amboceptor is desirable and helpful in arriving at a valuable clinical result only in exceptional cases.

Journal of Medical Research, Boston

July, XXIII, No. 2, 235-401

25 *Histogenesis of Multiple Carcinoma of Skin. L. Loeb and W. O. Sweek, St. Louis.
26 *Studies in Anaphylaxis. R. Weil, New York.
27 *Complement Content of Blood in Malignant Disease. T. Ordway and E. Kellert, Boston.
28 *Factors in Production and Growth of Tumor Metastases. E. E. Tyzzer, Boston.
29 *Protein Metabolism in Certain Tumor-Bearing Rats. T. Ordway and J. L. Morris, Boston.
30 Complement Fixation in Glanders. L. Frothingham and S. O'Toole, Boston.
31 *Complement Fixation in Syphilis with Spirochaeta Antigens. J. A. Kolmer, W. W. Williams and E. E. Laubaugh, Philadelphia.
32 *Wassermann Reaction with Normal Rabbit Serum. J. A. Kolmer and A. J. Casselman, Philadelphia.
33 Investigation of Origin of Immune Serum Necrosis of Liver. H. T. Karsner and J. C. Aub, Boston.
34 *Control of Infectious Diseases by Protective Inoculation. P. H. Hiss, New York.

25. **Multiple Carcinoma of Skin.**—Loeb and Sweek come to the following conclusions: The formation of multiple carcinoma of the skin depends on a primary increase in activity of certain parts of the epidermis. It is an affection of the epithelial cells independent of proliferative changes or of collections of round cells in the connective tissue, and independent of attractive influences of blood-vessels. The proliferative energy of the epithelium which leads to the formation of the multiple carcinoma is relatively small. The infiltrative power of the proliferating epithelium is equally slight. In consequence of this slight infiltrative power there may be an outgrowth of epithelium into the air instead of a downgrowth into the underlying cutis. In a certain relationship to the deficiency in proliferative and infiltrative power stands perhaps the inability of the proliferating epithelium to undergo the normal metamorphosis of the surface epithelium into keratohyalin and into keratin. As to the cause for the multiple proliferation of epithelium over a certain area of the skin, no definite statement is made by the authors. They say that we may have to deal with a primary stimulation of the epithelium. It is, however, also thinkable, that the pathologic changes found in the skin, especially in the connective tissue, may have entailed an abnormal metabolism of the skin leading to the production of substances exerting a stimulating effect on the proliferative energy of the epithelium at various places. It is furthermore conceivable that in addition slight external stimuli of a more accidental character, as for instance mechanical pressure, the influence of light, Roentgen rays or changes in temperature, may, in such a prepared soil, decide why certain parts of the diseased area become affected and show a proliferation of the epithelium at a time when in neighboring parts the epithelium is still in a resting condition. This suggestion is, of course, of a purely hypothetical character at present. On the other hand, it is not very probable that the changes in the connective tissue which were found led to a decrease in the mechanical tension, under which the epithelium lives normally. On the contrary they notice that the connective tissue resists very successfully at various places the increased tendency of the epithelium to grow downward.

26. **Anaphylaxis.**—Weil believes that guinea-pigs may be sensitized to a foreign protein (sheep-serum or rabbit-serum) by the repeated injection, on successive days, of massive doses (3 c.c.) of the foreign protein. The guinea-pigs become hypersensitive approximately eight days after the last dose. They differ in no essential particular from guinea-pigs sensitized in the usual fashion by a single small dose. The minimal lethal dose in guinea-pigs prepared by a series of injections is found to be larger than in those prepared in the usual fashion. This is attributed to the fact that their blood is very much richer in immune bodies, as is herein experimentally demonstrated. These experiments are offered as further evidence of the view that anaphylaxis and immunity are conditions which differ from each other only in the relative quantity of circulating antibody.

By means of preliminary treatment with normal rabbit-serum a guinea-pig becomes altered in such wise that it is refractory to sensitization by immune rabbit-serum. The effectiveness of this preliminary treatment depends on two factors: the amount of normal rabbit-serum administered, and the length of the interval between the preliminary and the sensitizing injections. The time during which passive sensitization persists, after having been induced by heterologous immune serum, may be shortened by the preliminary, or subsequent, injection of normal heterologous serum of the same species. The preliminary injection of sheep-serum protects guinea-pigs, in a certain proportion of cases, against the sensitizing effect of immune rabbit-serum. This effect is much less regular and pronounced than when rabbit-serum has been used for the preliminary injection. For these facts the following conclusions are drawn by Weil: First, that protection against sensitization, as before described, is due to immunization of the guinea-pig, with neutralization of the antibodies contained in the immune serum subsequently introduced. Second, that it is therefore possible to induce immunity toward specific heterologous antibodies by means of the injection of a normal heterologous serum. Third, that this immune reaction occurs earlier than does anaphylaxis, and that it is also more delicate, in that it indicates the presence of a group reaction, or immunization, which is not revealed by the latter method. Fourth, that the duration of passive sensitization, when induced by the injection of heterologous immune serum, is in all probability determined by the time necessary for the development of an immunity to the introduced foreign serum.

By the injection on several successive days of large doses of normal rabbit-serum it is regularly possible to protect guinea-pigs against the sensitizing action of immune rabbit-serum. This protection may be manifest within one or two days after the preliminary treatment has ended, and continues for at least two weeks longer. After sensitization of the guinea-pig by means of the injection of immune rabbit-serum

has been established, it is possible to terminate this before its normal time of disappearance, by means of the injection on several successive days, of large doses of normal rabbit-serum. It is regularly possible to protect guinea-pigs by the repeated injection of large doses of normal sheep-serum against the sensitizing effect of immune rabbit-serum. Sensitization by immune rabbit-serum may be abolished as in two, by the subsequent injection of sheep-serum in repeated large doses. The conclusion is drawn that these phenomena, provisionally described as "saturation" and as "displacement," are probably due to the immunization of the guinea-pig, either directly (by rabbit-serum) or indirectly (by sheep-serum) against the immune rabbit-serum. This view is supported by the conclusions drawn from the two earlier studies included in this paper. Animals actively sensitized against horse-serum cannot be desensitized by repeated injections of sheep-serum. Passive sensitization by homologous immune serum in guinea-pigs has not been prevented by previous treatment with sheep-serum or guinea-pig-serum. Weil believes that these results confirm the view that the phenomena of saturation and displacement are to be explained on the basis of immunization against introduced heterologous antibodies.

27. **Complement Content of Blood.**—The hemolytic complement content of the blood-serum in different varieties and stages of human cancer in the majority of cases was found to be relatively constant by Ordway and Kellert. The amount is practically the same as that found in health and in persons suffering with certain other diseases. Such human serum (in most cases) contains one-tenth to one-twentieth as much hemolytic complement as pooled serum from adult guinea-pigs. There is no increase of hemolytic complement in myelogenous or lymphatic leukemia. The hemolytic complement content in the plasma of citrated human blood does not differ from that in the serum.

28. **Production and Growth of Tumor Metastases.**—The course of procedure to which the patient is frequently subjected—the palpation of the mass in question in repeated physical examinations, the violent scrubbing often employed in preparing the field of operation—is almost identical with that which Tyzzer employed for the experimental production of metastasis. He emphasizes that it would be of advantage to the patient if each questionable tumor of the breast, for example, could be regarded as a high explosive, the least manipulation of which should be absolutely avoided both prior to and during the operation. It is not improbable that by this means metastasis and extension beyond the field of operation could be prevented and the percentage of cases cured by operation increased. From the point of view of metastasis it would appear from Tyzzer's results much less serious to cut into a tumor than to exert pressure on it, although the effect of the distribution of tumor tissue throughout an extensive operation is quite generally understood. It is not improbable that the removal of a tumor of large size from which metastasis has alrady occurred results in a more rapid growth of the secondary deposits. This should not weigh too heavily, however, in considering palliative operations of this sort, for internal tumors not being under the direct observation of the patient furnish a less constant source of apprehension, and the removal of a large external tumor may make the case much easier for the physician to manage.

Operations incomplete but involving the incision of implanted tumors do not increase the incidence of metastases, but these grow more rapidly as the result either of an increase in the amount of food material made available by the removal of a large mass of tumor tissue elsewhere (athrepsia) or of the elimination of the element of cachexia and improvement of the physical condition which almost invariably occurs. Radical operations involving the removal of all the tumor—except minute masses which subsequently come into evidence along the path of the inoculating trochar—if performed just prior to the period in which metastasis commences, results in a temporary freedom from this complication even though recurrence commonly occurs. Metastasis may be artificially produced by the manipulation and massage of the implanted tumor. This is accomplished as readily during the early development of the tumor as in the period in which metastasis naturally occurs.

The production of metastases is dependent on certain demonstrable factors—the biologic character of the tumor, the duration of its growth, the size of the primary mass, possibly peculiar conditions furnished by the host tissues, and, under artificial conditions, forcible manipulation. The so-called "pre-metastatic period" is better accounted for by an absence of the conditions necessary for the dissemination of tumor cells than by a phase of "active resistance" during which the further development of tumor emboli is prevented. By the early artificial dissemination of tumor cells by the manipulation of the primary tumor, this period may be greatly shortened.

29. **Protein Metabolism in Rats.**—The protein metabolism of certain tumor-bearing rats as indicated by the examination of the urine by Ordway and Morris differed from normal controls in regard to elimination of uric acid, which is markedly increased, especially when the tumor is growing rapidly. There is also a distinct increase in creatin and a diminution in creatinin in these tumor-bearing animals.

31. **Complement Fixation in Syphilis.**—Serums of normal persons and normal rabbits as well as serums of persons suffering with diseases other than syphilis and yielding negative Wassermann reactions, the authors found do not contain substances capable of fixing complement with *pallida* antigens. About 50 per cent. of serums from persons in all stages of syphilis and giving positive Wassermann reactions and luetic histories reacted negatively with *pallida* antigens. Two cases of primary syphilis were negative; of twenty-three cases of secondary syphilis, 30 per cent. reacted positively; of fifty-eight cases of tertiary syphilis, 48 per cent. were positive, as were two of three cases of hereditary syphilis. In every instance the degree of fixation with the *pallida* antigen was much less than with the stock lipoidal extracts and in only one case of secondary syphilis treated with mercury was the reaction positive with the *pallida* and negative with the stock antigens. The reaction with the *pallida* antigens are weak and too inconstant to be of routine practical value. Serums of rabbits immunized with pure cultures of *Spirochaeta pallida* yielded strong reactions with the *pallida* antigens. As controlled by the examination of one hundred normal rabbits these serums also gave positive reactions with stock lipoidal extracts.

Many of the human serums and all the rabbit immune serums were likewise tested with control antigens of sterile culture mediums, pure washed cultures of typhoid and cholera bacteria as well as cultures of these organisms in the same culture mediums as used in the cultivation of *Spirochaeta pallida*. With the human serums a few doubtful reactions were obtained with the antigens of sterile mediums and more marked reactions with the typhoid and cholera culture medium antigens. The rabbit immune serums not only reacted strongly with these antigens but likewise yielded weak reactions with antigens of washed typhoid and cholera bacteria. From the fact that a lipoid was demonstrated in these antigens it may be that the non-specific reactions were due to the usual union of lipoid and lipoidophilic antibody, although the authors are unable to explain at present why this is especially true with the rabbit-immune serums. From the fact that the reactions with alcoholic extracts of pure washed spirochetes were uniformly negative it is apparent that the antigenic principle of the spirochete is not readily abstractable in alcohol, the aqueous extracts being preferable in complement fixation reactions.

32. **Wassermann Reaction with Rabbit Serum.**—In these experiments a percentage of serums of normal rabbits yielded positive complement fixation reactions with lipoidal extracts. With aqueous and alcoholic extracts of *pallida* as antigen fixation did not occur. With acetone extracts of syphilitic liver no fixation was found when using 0.05 and 0.1 c.c. of serum; with 0.2 c.c. serum fixation occurs in 10 per cent., and with 0.4 c.c. in 31.3 per cent. of normal rabbit-serums.

With alcoholic extracts of syphilitic liver fixation did not occur with 0.05 c.c. serum; when using 0.1 c.c. fixation occurred in 13.3 per cent.; with 0.2 c.c. in 20 per cent.; and with 0.4 in 27.5 per cent. of normal serums. With extracts of the acetone insoluble lipoid fraction fixation did not occur with 0.05 and 0.1 c.c. of serum; with 0.2 c.c. fixation occurred in 33 1 per cent., and with 0.4 c.c. in 55.7 per cent. of normal rabbit serums. An alcoholic extract of beef heart reenforced with cholesterin showed the highest percentage of positive reactions. With 0.05 c.c. serum fixation did not occur; with 0.1 c.c. fixation occurred in 20 per cent.; with 0.2 c.c. in 40 per cent., and with 0.4 c.c. in 56.8 per cent. of normal rabbit serums. The occurrence of positive complement-fixation reactions with normal rabbit serums and lipoidal extracts bears no relation to coccidiosis. While the cause of this phenomenon is as yet unexplained it is probably due to the presence in rabbit-serum of a lipoidophilic substance with affinity for certain lipoids or lipoidal substances.

34. **Control of Infectious Diseases.**—Hiss outlines briefly the result of the treatment of infections in animals with leukocyte extracts. These infections or poisonings have usually been brought about by intravenous inoculations, and, as a rule, the treatments with extract have been injected subcutaneously, although at times intraperitoneally. Animals receiving subcutaneous injections of rapidly fatal doses of *Staphylococcus pyogenes aureus* can generally be saved by treatment with the extract of normal leukocytes of rabbits even in small doses, especially when these are given intraperitoneally. When intravenous injections of staphylococcus are practiced, the results are different, but treated animals usually survive the controls many days and present modified histologic pictures. In streptococcus infections there was a marked lengthening of life and even a survival of the treated animals, and better results in the animals treated early than in those treated late. All of the animals which lived long enough developed articular or periarticular lesions. Pneumococcus infections surely fatal in untreated rabbits, become significantly modified in treated animals, even if this treatment be delayed many hours. In typhoid infections the animals receiving protection with leukocyte extract, shortly after this treatment, usually seemed worse than the control, and to the inexperienced would appear the most likely to die. But leukocyte extracts have a remarkably beneficial modifying action on the course of typhoid infections or poisonings in rabbits. Severe tests and experiments with meningococcus infection point strongly to the value of leukocyte extract in the treatment of this infection.

The points which Hiss says speak most strongly for the explanation of the beneficial action of leukocyte extracts, as either poison-neutralizing or poison-prohibiting, rather than primarily bactericidal or bacteriolytic, or even one of the immediate phagocytosis, are first, the effect on temperature; for, when the temperature is high it tends to be lowered, and when it is falling below normal from the intensity of the poisoning it tends to rise on treatment; which is a sign, of course, under this condition, of returning strength on the part of an animal; and secondly, the effect in preventing diarrhea, which is a symptom of poisoning in such intoxications.

Journal of Outdoor Life, New York

August, X, No. 8, pp. 224-254

35 Getting Together for Results. F. E. Crowell, New York.
36 Cooperation of Tuberculosis Agencies with Labor Unions and Factories. J. R. Shillady, Buffalo.
37 Cooperation through Private to Governmental Agency. F. E. Wing, Chicago.
38 National Bureau of Tuberculosis Legislation. R. H. Bishop, Cleveland.

Journal-Lancet, Minneapolis

August 1, XXXIII, No. 15, pp. 419-444

39 Teaching of Hygiene and Preventive Medicine in Medical Schools. J. L. Heffron, Syracuse, N. Y.
40 Surgical Treatment of Hyperthyroidism. C. Nootnagel, Minneapolis.
41 Therapy of Hyperthyroidism. H. A. H. Bouman, Minneapolis.
42 Medical Defense. R. H. Bosard, Minot, N. Dak.
43 *Danger from Bone Filings. R. E. Farr, Minneapolis.
44 *Sounding-Board as Aid in Diagnosis of Diseases of Chest. J. E. Engstad, Minneapolis

43. **Danger from Bone Filings.**—January 23, the humerus of Farr's patient was plated after two unsuccessful attempts at reduction, with the patient under ether, had been made. During this operation no special precautions were taken to prevent the "bone dust" from being scattered over the exposed muscles while the bone ends were being sawed off in preparation for the plating. When the second operation was performed for the purpose of liberating the musculospiral nerve from the callus, the Lane plate which was placed on the bone was found completely buried in callus to the depth of 1 cm. The brachialis anticus and triceps, contiguous to the bone, were infiltrated with new bony tissue over an area measuring approximately five inches in length. Farr believes that this condition was evidently due to the scattering of osteogenetic elements over the exposed muscles at the time of operation, as only the portions of the muscles exposed at operation were involved. The overgrowth of bone and the bone plate were removed, and a strip of the triceps was wound about the humerus. A small amount of motion still remained. Great care was used in liberating the musculospiral nerve, which was first identified at the lower angle of the wound.

44. **Sounding-Board in Diagnosis of Diseases of Chest.**—The sounding-board used by Engstad is three feet wide by five feet high, made from two piano sounding-boards, the boards being set four inches apart in a hardwood frame properly fastened with glue and avoiding nails or other metallic reinforcements. The boards are braced in their center by a bridge of hardwood, and the front board has two holes two inches in diameter bored through it, which tends to equalize the pressure of the air between the boards and frame while in a state of vibration and the circumambient air, which is the cardinal principle for the proper reflection and reinforcement of the air-waves, or energy in the form of vibrations.

This apparatus, Engstad says, will markedly intensify all sounds from the chest-walls, and it has been of great service to him in suspected small cavities, deposits and small infarcts in the chest which are revealed by the reinforced vibrations as reflected from the sounding-board, which prevents the sound waves from disappearing in space, but are reflected redoubled in the angle of the impact.

Kansas Medical Society Journal, Kansas City

July, XIII, No. 7, pp. 265-304

45 Modern Methods in Diagnosis of Syphilis. H. M. Conner, Topeka.
46 Obstruction of Upper Respiratory Tract. J. R. Scott, Newton.
47 Present Approved Methods of Treatment of Obstructions to Lacrimonasal Duct. E. N. Robertson, Concordia.
48 Importance of Inspection and Standards for Medicinal Substances. L. E. Sayre, Lawrence.

Laryngoscope, St. Louis

July, XXIII, No. 7, pp. 721-800

49 Recent Progress of Endoscopic Methods as Applied to Larynx, Trachea, Bronchi, Esophagus and Stomach. C. Jackson, Pittsburgh.
50 Removal of Foreign Bodies from Upper End of Esophagus. R. H. Johnston, Baltimore.
51 Brief Pathologic Study of Papillomas with Reference to Their Existence within Nose. R. B. Scarlett, Trenton, N. J.
52 Suggestions in Acoumetry. G. Gradenigo, Turin, Italy.
53 Treatment of Persistent Otorrhea in Infants and Young Children by Establishment of Postauricular Drainage. W. C. Phillips, New York.
54 Differential Diagnosis and Treatment of Acute Labyrinthitis. L. L. Henninger, Council Bluffs, Ia.

Missouri State Medical Association Journal, St. Louis

July, X, No. 1, pp. 1-42

55 Making of a Surgeon. F. G. Nifong, Columbia.
56 Question of Prevention of Insanity, and State Hospitals and How They May Be Improved. M. P. Overholser, Harrisonville.
57 Endometritis. J. F. Mackey, Odessa.

New Jersey Medical Society Journal, Orange

July, X, No. 2, pp. 55-108

58 Mechanistic Theory of Disease. G. W. Crile, Cleveland.
59 Privileged Communication. W. J. Chandler, South Orange.
60 Idealism in Medicine. W. P. Eagleton, Newark.

August, No. 3, pp. 109-166

61 *Pneumonia in Infancy and Childhood. J. F. Bell, Englewood.
62 Acute Lobar Pneumonia in Adult Life. A. C. Zehnder, Newark.
63 Complications of Pneumonia. P. H. Markley, Camden.
64 Pathology of Pneumonia. A. B. Davis, Camden.
65 *Treatment of Acute Lobar Pneumonia. P. Marvel, Atlantic City.

61. **Pneumonia in Infancy and Childhood.**—The treatment of pneumonia in children, Bell says, should be simple but carefully and individually directed, and laid out under the following four heads: 1. Medical (a) Cathartics.—Bell finds it generally a good plan to empty the intestine with either castor oil, calomel with milk of magnesia or podophyllin and soda. (b) Sedatives.—Sedatives are serviceable for pain and harassing cough. Paregoric is specially suitable for this purpose; codein and heroin may be used, the less of either the better. (c) Stimulants.—When stimulants are necessary Bell uses caffein for the low muttering delirious cases. Alcohol freely even in babies, and in a serious crisis digalen intravenously. Following Sajous' suggestion, he has used in a few cases 5 c.c. doses of normal salt solution every two hours, adding orange juice and egg white occasionally. (d) Serum therapy.—He has used anti-pneumococcus serum in two cases. In one of these antistreptococcic serum was used in conjunction, because streptococci were abundant in the sputum. Large doses were given and the patient did well. It follows that the earlier the serum is given the better the opportunity for favorable action. 2. Hydrotherapeutic.—Sponge baths of water at 21 C., 32 C. or 41 C. (70-90-106 F.). Bell usually begins with temperature 32 C. (90 F.) to 40 C. (104 F.). 3. Dietetic.—The diet must be selected in accordance with age and needs of the child. 4. Hygienic.—Bell has found it advantageous to treat all his pneumonias more or less in the open air.

65. **Treatment of Acute Lobar Pneumonia.**—The treatment which in Marvel's opinion promises most for the reduction in the mortality of pneumonia must be along the line of antipneumococcic serum. It has already been found that an antipneumococcic serum prepared by immunizing dogs with increasing doses of pneumococci obtained by lung puncture in cases of pneumonia will protect mice from a fatal outcome when inoculated with the same pneumococcus in sufficient dose to cause death in control animals, and various serums have been and are now being tried with some degree of success, but limited no doubt by the fact that there are so many different strains of pneumococci that it has seemed impossible to produce a serum that would be helpful in all cases, and there is, of course, no time to produce a serum in each case from the infecting organism.

New Mexico Medical Journal, Las Cruces

July, X, No. 4, pp. 89-112

66 Diabetes Mellitus. C. M. Yater, Roswell.
67 What Next? E. D. Strong, El Paso, Texas.
68 Gonorrheal Urethritis with Complications. J. J. Walker, Dexter.

New Orleans Medical and Surgical Journal

July, LXVI, No. 1, pp. 1-91

69 Eugenics in Its Relationship to Welfare of Public. T. B. Futcher, Baltimore.
70 What General Practitioner Should Know About Gonorrheal Iritis. R. L. Harrell, Alexandria, La.
71 Acute Pharyngeal Tonsillitis (Acute Adenoiditis). H. Dupuy, New Orleans.
72 Some Remote Effects of Chronic Sinus Suppuration. R. C. Lynch, New Orleans.
73 Symptoms and Diagnosis of Diphtheria. L. J. Menville, Houma, La.
74 New Technic for Intravenous Injection of Neosalvarsan. A. H. Cook, Hot Springs, Ark.
75 Surgical Aspects of Goiter. U. Maes, New Orleans.
76 "Pellosis Rheumatica." J. E. Landry, New Orleans.
77 Einhorn Duodenal Tube and Its Uses. S. K. Simon, New Orleans.
78 Relations That Should Exist between Surgeon and Anesthetist. A. M. Caine, New Orleans.
79 Review of About 650 Anesthesias. E. L. King, New Orleans.
80 Use of Heated Ether Vapor as Anesthetic. H. E. Nelson, New Orleans.

Pennsylvania Medical Journal, Athens

July, XVI, No. 10, pp. 763-846

81 Rules and Regulations Governing Examination. J. M. Baldy, Philadelphia.
82 Important Points of Medical Ethics. G. W. Simpson, Mill Creek.
83 Lessons and Reminiscences of Forty Years of Active Practice. O. H. Rockwell, Monroeton.
84 Use of Roentgen Rays in Neurology. G. E. Pfahler, Philadelphia.
85 Motion-Picture Demonstration of Nervous and Mental Diseases. T. H. Weisenburg, Philadelphia.
86 Isolated Case of "Trichiniasis." A. E. Blackburn, Philadelphia.
87 Surgical Aspects of Furuncles and Carbuncles. P. G. Skillern, Philadelphia.
88 Five Cases of Nephrolithiasis with Special Reference to Symptomatology. M. P. Warmuth, Philadelphia.
89 Treatment of Some Acute Ear Conditions by General Practitioner. C. C. Eves, Philadelphia.
90 Clinical Observations on Blood-Pressure. J. Daland, Philadelphia.
91 Need of Plan to Eliminate Mentally Unfit from Service in Transportation Companies. T. Diller, Pittsburgh.
92 The Old School and the New. N. C. Mills, Big Run.
93 Milk, in Its Relation to Disease, Especially Infant Mortality. T. H. Wertz, Hanover.
94 Plan for Placing Homeopathy on Proper Basis as Scientific Therapeutic Resource of Medicine. F. F. Casseday, Portland, Ore.

Public Health Journal, Toronto

July, IV, No. 7, pp. 395-440

95 Examination of Sputum in Ontario. C. D. Parfitt, Gravenhurst, Ontario.
96 Tuberculosis in Toronto. E. H. Dyke, Toronto.
97 Public Health Act of Ontario. J. W. S. McCullough, Ontario.
98 Trachoma. H. F. L. Taylor, Punjab.
99 Medical Organization during Rear-Guard Actions in Civilized and Savage Warfare. W. C. Beevor.
100 Serotherapy in Canada. J. Grant.
101 Disposal of Garbage and Refuse in Towns. W. R. Hall, Chatham, Ont.

Wisconsin Medical Journal, Milwaukee

July, XII, No. 2, pp. 35-62

102 Treatment of Diphtheria Carriers by Overriding with Staphylococcus Aureus. W. F. Lorenz, Mendota, and M. P. Ravenel, Madison.
103 Eighteen Years' Experience with Drug and Liquor Habitués. A. M. Rogers, Oconomowoc.
104 What You Wear, Not Knowing It. Address to Nurses. H. M. Brown, Milwaukee.
105 Early Diagnosis of Gastric Carcinoma by Aid of Roentgen Ray. W. F. Hilger, Milwaukee.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Australasian Medical Gazette, Sydney

June 21, XXXIII, No. 25, pp. 587-614

1 *Hydatid Disease. J. Ramsay.
2 Deformity of Wrist Developed Ten Years after Accident. M. Herz.
3 Case in Which Round Worms Caused Symptoms Leading to Diagnosis of Appendicitis. D. Kelly.

June 28, No. 26, pp. 615-640

4 Bone and Joint Lesions and Their Treatment. H. G. Tymms.
5 *Three Cases of Surgical Interest. J. A. G. Hamilton.
6 Case of Multiple Pregnancy: Quadruplets. H. Peet.

1. **Hydatid Disease.**—Ramsay reports cases of hydatid disease occurring in the lung, liver, hernia, bile-ducts, mesoappendix, peritoneum, bladder, fallopian tube, posterior axilla, between the abdominal parietal muscles, neck, mediastinum, thyroid, femur and antrum of Highmore.

5. **Three Cases of Surgical Interest.**—Hamilton cites a case of cesarean section for eclampsia, one of post-puerperal inversion of uterus and another of omental adhesions causing unusual symptoms.

British Medical Journal, London

July 26, II, No. 2743, pp. 157-212

7 Medical History of Brighton and Neighborhood. W. A. Hollis.
8 *Some Aspects of Internal Secretion in Disease. G. R. Murray.
9 *Gifts of Surgery to Medicine. B. Moynihan.

8. **Internal Secretion in Disease.**—Murray points out that as yet we are able to recognize with certainty only the maladies which are due to well-marked changes in the structure and function of these organs. He suggests that it is probable that some less definite forms of ill-health may also be due to variations in the activity of one or more glands, the significance of which we shall be better able to appreciate when our knowledge of their functions becomes more exact. What, however, is most desired is to find satisfactory means by which we can supplement deficient secretion on the one hand and control harmful overactivity on the other. He hints that in the light of further knowledge it may be possible adequately to supplement suprarenal insufficiency and so relieve the symptoms of Addison's disease. The treatment of exophthalmic goiter and acromegaly will become more satisfactory as more adequate methods of checking the abnormal flow of secretion are acquired, when it is to be hoped that surgical measures will become unnecessary. Pancreatic diabetes may also prove to be more amenable to treatment by

methods at present beyond our reach. Clinical medicine has already gained enormously from results obtained by experimental pathology, and Murray looks to the future with confidence for efficient methods of treatment within our reach.

In commenting on thyroidal insufficiency, he bids us note that whereas typical cases of established myxedema are strikingly characteristic, the slight and early forms of the disease may easily be overlooked. In middle-aged women who complain of lassitude, chilliness and other subjective sensations, associated with slight dryness of the skin, some loss of hair, and a little thickening of the subcutaneous tissues, or other signs of slight thyroidal insufficiency, it is necessary to remember that myxedema may be the explanation of the symptoms, though every one of them, taken separately, is so common and so trivial. He summarizes briefly the effects of the partial or complete failure of thyroidal hormones as demonstrated by the effects of disease or removal of the gland in man and animals, and includes a short historical review of the application of the knowledge so obtained to the treatment of thyroidal insufficiency, making a very modest reference to his own important share in this notable therapeutic advance. The first patient with myxedema which Murray treated is still alive and well, having been kept in health twenty-two years by this treatment, during which time she has taken liquid thyroid extract to an amount which in all is less than one gallon. The use of thyroid extract in various conditions in which there is no definite evidence of any deficiency in the thyroidal hormones makes another interesting section of the address, and the effects of hyperactivity of the thyroid gland, more especially as evidenced in the various degrees of exophthalmic goiter, are of the real importance which he attributes to them.

Murray points out some interesting associations of this disease, notably its relation to sugar tolerance and diabetes and to tuberculosis. He has found that pulmonary tuberculosis occurs but rarely in uncomplicated cases of exophthalmic goiter, and that when it does occur it is usually limited in extent and activity. This apparent resistance to infection he suggests is probably due to the increased activity of the metabolism of the tissues rather than to any direct action of the thyroid secretion. In commenting on the variability of the symptoms of Graves' disease, the occurrence of general and local crises was described by Murray. In the general crises almost all symptoms are aggravated, and the attacks may be alarming and dangerous. The explanation offered is that they are due to a sudden increase in the activity of the thyroid. The local crises may be described as cardiac, cutaneous, bronchial, gastric or intestinal, according to the organ or system mainly affected. To account for these local manifestations it is suggested that the thyroid secretion may contain different hormones capable of activating different organs. In reviewing the treatment of the condition of hyperthyroidism he speaks favorably of the application of suitable doses of Roentgen rays to the gland, and finds that the cutaneous and bronchial crises are generally controlled by belladonna in full doses and the gastric and intestinal crises by opium.

9. **Gifts of Surgery to Medicine.**—Moynihan points out that medicine in its quest of knowledge may rightly levy a tribute from every other science with which it comes into contact. Its doctrines and its practice are tested and may receive support or be refuted by work accomplished in other fields. Surgery in recent years has proved a powerful helpmeet not only in the elucidation of problems of internal medicine, but also by reason of the light it has brought to bear on the functions of many of the organs in the body. The experimental method, as a mode of inquiry, is not excelled in value by any other, and no experiments, Moynihan holds, can claim an equal rank with those which are a part of almost all surgical procedures. The chief glory of the surgeon comes from the dedication of his powers to the service of an individual; but there is a cause also to be served. In every operation something may be learned, not only of those disorders which call urgently for relief, but of other associated, or it may be separate, conditions which chance at the same moment to be present. The researches so carried out on a human patient are performed with a sterner sense of responsibility and with a graver ritual and are impressed by more relevant influences than attach to any other form of inquiry. Their results are accordingly of far higher value. Clinical research, when sedulously conducted and illuminated by the disclosures made on the operating-table, affords the most accurate of all methods of investigation into the diseases by which man is attacked. The succor of an individual should mean also the taking of a step forward in the solution or the better understanding of the manifold and perplexing problems of disease.

Indian Medical Gazette, Calcutta

July, XLVIII, No. 7, pp. 253-292

10 Some Unusual Forms of Parasite of Pernicious Malaria, Found at Endemic Blackwater Fever Center in Blood Smears from Certain Children. N. P. O. Lalor.
11 *Rough Clinical Method for Quantitative Estimation of Chlorids in Blood. A. W. Overbeck-Wright.
12 Serodiagnosis of Tubercle by Alexin Fixation. V. B. Nesfield.
13 Radio-Activity of Some Springs in Bombay Presidency and Baluchistan. H. Sierp.
14 Hints to Subassistant Surgeons and Others on Administration of Chloroform. B. Higham.
15 Malaria in Andamans: Fever with Jaundice Cases. J. M. Woolley.
16 *Ligation of Internal Iliac and Ovarian Arteries for Inoperable Carcinoma of Uterus, Combined with Curettage and Cautery. V. B. Green-Armytage.

11. **Estimation of Chlorids in Blood.**—The method used by Overbeck-Wright is based on the principle of diffusion. All that is required is a couple of dozen glass tubes of the diameter of a goose-quill, about 6 inches long and sealed at one end; a small wooden stand, like a test-tube stand, for holding the tubes; a vernier scale into which the tubes are clipped for the necessary readings to be made, and a Wright's pipet. Reagent: (a) Constituents: agar-agar (pulv.) 6 grains; silver chromate, 1 grain; glycerol (glycerin) ½ ounce; distilled water, 2 ounces. (b) Preparation: Mix the agar-agar and silver chromate thoroughly in a mortar, emulsify with the glycerol and then add the water, mixing carefully throughout. Transfer to a porcelain crucible and bring to the boil over a spirit lamp. Boil for five minutes and then fill into tubes. Allow it to set. Place 5 mm. (¼ inch) depth of the solution to be tested on the top of the jelly in one of the tubes and into eight other tubes fill in respectively 5 mm. (¼ inch) of salt solutions varying from 0.8 to 0.1 per cent., stand for fifteen minutes and then read off the depth of penetration into the jelly as shown by the decolorization, the rich pink of the silver chromate becoming a flaky white with chlorids. A comparison of the depth of penetration of the solution to be tested with that of the varying salt solutions gives one at once the percentage solution of chlorids. So far Overbeck-Wright has found that normal blood contains a 0.5 to 0.75 per cent. solution of chlorids in the plasma, and he dilutes the blood as a rule to 1 : 3, as he finds that a larger variation in the smaller percentages and less chance of error. A 6 per cent. solution of sodium citrate or a 3 per cent. solution of sodium oxalate may be used to prevent coagulation, but the latter is preferable. No more blood is required for this test than for a Widal's reaction and a mere prick of the finger as a rule gives ample amount for the test.

16. **Ligature of Iliac and Ovarian Arteries.**—Green-Armytage calls attention to an operation first suggested by Charles Ryall of the London Cancer Hospital, namely, tying of the internal iliac and ovarian arteries, the principle of the treatment being vascular starvation of the growth, and being based on the same principle as the occasional operation of ligation of the external carotids for the terrible sufferings of advanced cancer of the tongue. In the Eden Hospital, at Calcutta, when the cachexia and general condition of the patient prohibit laparotomy, it is the custom to use the sharp spoon thoroughly and afterward go over the bleeding surface with Paquelin's cautery, and then plug the cavity with tampons which have been soaked in a saturated solution of zinc chlorid and dried the vagina below being plugged with powdered soda and gauze. In three to five days the plugging is removed, and vagina douched daily until the sloughs separate. When, however, the patient's general condition is fair, pain is a marked symptom, or hemorrhage is severe, they have per-

formed Ryall's operation. During the last eighteen months nine patients have been operated on. At the end of the operation if the pulse is good, the patient is put in the lithotomy position, and the growth is dealt with as detailed above. If the patient's condition is not good, the growth is not dealt with till a week or ten days after the primary operation. There is usually a slight febrile reaction after the operation for a few days which Green-Armytage says need cause no alarm. The after results of the operation are astonishingly good.

The general health improves markedly, the pain subsides entirely, as the discharge ceases, and the growth of the cancer is retarded for a considerable time. The net result is that, though the days of the patient may not have been greatly extended, she is able to live in comparative comfort for a very much longer period than the usual lines of treatment permit. Three cases have been seen 7, 9, and 13 months after operation, comparatively well and with no symptoms beyond a discharge due to a slow recrudescence of the original tumor. In four cases in which vesical irritability was a marked feature of the disease, this symptom completely disappeared for many months. There has been no operation mortality.

Lancet, London

July 26, II, No. 4691, pp. 199-272

17 Some Aspects of Internal Secretion in Disease. G. R. Murray.
18 Gifts of Surgery to Medicine. B. Moynihan.
19 Arsenic Cancer. (To be continued.) W. H. Nutt, J. M. Beattie and R. J. Pye-Smith.
20 *Contamination of Thoracic Cavity and Its Contained Lymph-Nodes Follows Infection of Peritoneal Cavity. C. C. Twort.
21 Use of Arsenical Compounds for Syphilitic Disease of Nose and Throat. H. L. Whale.
22 Early Diagnosis of Case of Leprosy Much Assisted by Roentgen Rays. T. Miller, Manitoba.
23 Decalcifying Action of Oxalic Acid. H. J. B. Fry.

20. **Contamination of Thoracic Cavity.**—The inoculation of a certain quantity of oil into the peritoneal cavity to prevent any absorption of septic material has been recommended and has been practiced fairly extensively, especially by continental surgeons. A few experiments bearing on this question were also performed, oil being inoculated from fifteen minutes to twenty-four hours before the injection of the bacilli. Although the number of experiments in this direction have not been numerous, Twort says, they demonstrate clearly that the oil does not prevent the escape of bacteria from the peritoneal cavity and their absorption by the thoracic glands, and it is doubtful if it in any way hinders the dissemination of the bacilli. The time necessary for the escape of infectious material from the peritoneal cavity is thus often only a question of minutes, and it is obvious that even during an operation if the general peritoneal cavity is accidentally contaminated from the rupture of a localized abscess, etc., ample time is given before the end of the operation for the thoracic glands to become infected, and if these glands are penetrated there is a danger of the infection becoming generalized. These facts may explain the beneficial effect of Fowler's position after abdominal operations.

Journal of Tropical Medicine and Hygiene, London

July 15, XVI, No. 14, pp. 209-224

24 Clinical Study of Malarial Fever in Panama. J. P. Bates.

Annales de Médecine et Chirurgie Infantiles, Paris

July 1, XVII, No. 13, pp. 417-452

25 *Effusion in the Pericardium and its Puncture. (Les épanchements du péricarde. Etude clinique et thérapeutique. La ponction épigastrique de Marfan.) G. Blechmann.

July 15, No. 14, pp. 453-484

26 Primary and Epileptic Dementia in Children. C. Perin.
27 Meningococcus Septicemia. S. Portret.
28 *Infectious Endocarditis in Children: Three Cases. A. Blind.

25. **Effusion in the Pericardium.**—Blechmann insists that this is a more frequent occurrence in children than is generally recognized. It is not exceptional even in young infants, and fully 25 per cent. of all cases of pericarditis, he affirms, occur before the age of 5, and 50 per cent. before 15. These percentages are based on a study of 500 cases of pericarditis in the London hospitals. Effusion in the pericardium is rarely demonstrated during life but he found it in 3 per cent. of all cadavers, and there is nothing to justify the assumption that it is an agonal phenomenon as usually believed. In young infants the pericarditis with effusion is generally secondary to bronchopneumonia or empyema; between 5 and 15, acute articular rheumatism is the usual primary cause except that after 10 pneumonia may be incriminated. Between 15 and 30, rheumatism and pneumonia are encountered in the antecedents with about equal frequency, and also eruptive diseases or a bone affection. After 30, nephritis is generally responsible or cancer, and a hemorrhagic effusion is more frequent. The heart enlarges with the onset of pericarditis and dulness appears in the fifth right intercostal space (Rotch's sign). When this is accompanied by a progressively increasing symmetric area of dulness, an effusion in the pericardium is almost beyond question. Signs of abdominal and diaphragm paresis are more common in pericarditis without than with effusion. This alone may point to incipient pericarditis. The dyspnea with a large effusion in the pericardium may be relieved only by assuming the knee-chest position. Permanent distention of the jugular veins, without venous pulsation, shows that there is some obstacle in the pericardium. The "paradoxic pulse" is an important sign of pericarditis with effusion. The heart changes to a more vertical position, the apex abnormally low

The effusion collects below, back of or at the side of the heart but never in front, consequently the puncture had best be made below the xiphoid process, and if an incision is to be made it should be below the left costal arc and cartilage, so that the pericardium can be reached through the epigastrium. This technic is particularly advantageous for children; it spares the pleura, provides direct access to the pericardium and permits drainage at the lowest point. An exploratory puncture is always indicated. If a serous effusion is found of acute infectious, toxic or mechanical origin, the puncture alone is sufficient; in case of a tuberculous process puncture or pericardotomy without drainage is indicated. Purulent effusions require pericardotomy and drainage. The life of the patient may depend on early intervention, and he emphasizes that it is better for it to be too early and too extensive rather than to temporize and be too timid. Exploratory subxiphoid puncture should be the rule on the first suspicion, and this alone may cure; if not, examination of the fluid obtained at the puncture will show whether pericardotomy should follow at once or not.

28. **Endocarditis in Children.**—Blind's three cases were in children of 6 and 8, and the diagnosis was difficult as the causal acute articular rheumatism had passed unnoticed, or had not attracted the attention it deserved. The evolution of the endocarditis is very slow in such cases; the children have to be kept under supervision a long time and frequently examined by auscultation and the thermometer. The latter will reveal slight attacks of intermittent fever testifying that the endocarditis is still at work. The prognosis is difficult, as even mild endocarditis may leave irreparable valvular disease while extremely serious forms may heal without a trace. The salicylates and acetylsalicylic acid (aspirin) should be given not only during the acute phases but during the long drawn out mild evolution, and thus they may have to be kept up for a long time. Blind's three cases were all encountered in one month, suggesting an epidemic character, and all the children were free from symptoms after a few months of treatment.

Archives Générales de Chirurgie, Paris

June, VII, No. 6, pp. 641-768

29 *Abscess of the Liver. (Les abcès du foie à l'hôpital de Haiphong.) E. Sambuc.
30 *Treatment of Echinococcus Disease of the Peritoneum. (Principes du traitement chirurgical des kystes hydatiques multiples du péritoine. Indications du formolage in situ.) F. Dévé.
31 Transpleural Operations on the Lung. (La voie transpleurale. Condition de son emploi — sa valeur.) N. Lapeyre.
32 Extraction of Foreign Bodies under Radioscopic Control. P. Mauclaire.

29. **Tropical Liver Abscess.**—Sambuc calls attention to a number of points he has learned from practical experience in French China. As a rule the abscess is secondary to ameba dysentery, but alcohol and opium smoking are important factors. In 103 cases, 1893-1910, only two of the patients were women and only eleven were natives. Dysentery is less preva-

lent among the natives; their food is less harmful for the liver than the diet of Europeans, while they use less alcohol. The primary dysentery may be so mild as to escape detection or it may be mistaken for ordinary diarrhea, but dysentery is recorded as the primary cause of the liver trouble in 70 per cent. of the cases. The abscess was multiple in about 40 per cent., up to four abscesses in twelve cases and number unknown in thirteen. In twenty-two cases the abscess emptied into the air passages (7 with only 2 deaths); pleura (4); intestine (4); peritoneum (2); pericardium (1) or kidney (1), with death in fourteen of the twenty-two cases.

The front upper part of the right lobe is the most frequent seat of the suppuration, a zone corresponding to the seventh, eighth and ninth intercostal spaces. Differentiation of suppuration in the liver is often quite difficult as the liver trouble may simulate pleurisy or pulmonary tuberculosis or appendicitis or may present a syndrome suggesting malaria or typhoid. There do not seem to be any pathognomonic signs; the abscess may occur even without pain or swelling in the liver. The frequent congestion of the liver accompanying dysentery is also misleading. Abscess of the liver should be suspected whenever there is abnormally high evening temperature of uncertain origin. Puncture is harmless and generally permits differentiation of the lesion. The diagnosis of multiple foci is generally impossible except from the course of the affection. In case suppuration in the inferior aspect of the liver is suspected, an exploratory laparotomy is indicated. The abscesses close to the diaphragm are generally missed with an exploratory puncture as this is usually done too low for them. Among the post-operative complications, pleural effusion may prove fatal even when not very profuse.

He gives the details of fifteen especially interesting cases out of his total 202. In one case the liver trouble had been long erroneously treated on the diagnosis of malaria. In another an abscess in the right lobe was followed by one in the left lobe after a year's interval. In another case forty-eight punctures were made in the course of a month before the abscess was finally discovered. In another case the liver contained five liters of clear yellow pus. The absence of fever was noticeable in several of the cases. The bibliography on the subject since 1906 is appended.

30. **Treatment of Echinococcus Disease of the Peritoneum.**—Dévé uses a two-way trocar which permits aspiration of the contents of the cyst and then injection of a 5 or 10 per cent. solution of formaldehyd. If the cyst is pedunculated he cuts it out at once, but if not, and if it is very large, he applies the above technic and later opens the pocket and clears out the membranes, suturing and reducing the sac without draining. If the sac is not larger than an egg, the injection of the formaldehyd is sufficient alone. The surgeon should proceed very cautiously and not try to finish up the whole thing at one sitting.

Archives de Médecine des Enfants, Paris

July, XVI, No. 7, pp. 481-560

33 Salvarsan by the Rectum in Treatment of Children. E. Weill and Others.
34 Is Chorea the Result of a Mild, Curable Encephalitis? (Théorie organique de la chorée de Sydenham.) Deléarde, Valette and J. Comby.

Bulletin de l'Académie de Médecine, Paris

July 15, LXX, No. 27, pp. 59-118

35 Suggestions for Greater Efficiency in the Campaign against Tuberculosis. (Un programme d'ensemble pour la défense sociale contre la tuberculose.) A. Robin.

Journal d'Urologie, Paris

July, IV, No. 1, pp. 1-168

36 *Transfusion of Blood by Crile's Technic after Serious Hemorrhage from the Urinary Apparatus. F. Legueu.
37 *Renal Tuberculosis in Three Girls. J. Oraison.
38 *Importance of Examination of the Blood with Albuminuria. E. Roux.
39 Double Urethras with Epispadias: Three Cases. Lebrun.
40 *Hematuria Following Nephrectomy for Tuberculosis. M. Peña.
41 Extremely Painful Perinephritis: Two Cases. Nicolich.

36. **Transfusion of Blood After Serious Hemorrhage from the Urinary Apparatus.**—Legueu gives minute directions for applying Crile's method of direct transfusion, and reports a case in which it was used for a patient of 69 extremely debilitated from traumatic and spontaneous hemorrhage from the bladder. The donor was the healthiest of the patient's three daughters, and the immediate effect was brilliantly successful but the patient succumbed in a few weeks to complications, among them a suppurating eschar. Legueu regards the method as destined to realize actual resurrections in many cases, and urges others to master the technic so as to be ready to apply it properly in emergencies.

37. **Renal Tuberculosis in Girls.**—Oraison knows of only forty-eight cases on record of tuberculosis of the kidney in children, and here adds three to the list. One of the children had Pott's disease, another had had a brother and sister die of tuberculosis. The symptoms were about the same as with adults except that the children all had incontinence of the bladder. One child was apparently cured by nephrectomy; the child with the spinal disease was not operated on. Catheterization of the ureters is possible in children after 6 or 7 and even easy in some; Oraison has applied it to two children of 7 and 10. It is possible, he remarks, that with renal tuberculosis in children medical treatment might be given a little longer trial than in adults, in the very incipient cases. In one of his cases the mother was affronted with his diagnosis of tuberculosis of the kidney in her apparently healthy little daughter, although he found the right kidney large and tender and the terminal urine contained a tinge of blood. A year later nephrectomy became indispensable and the kidney was found studded with cavities. The child still has symptoms on the part of the bladder. The first sign of trouble in this case had been frequent micturition with extremely limpid urine; he regards this "limpid pollakiuria" as an important sign of incipient renal tuberculosis at any age.

38. **Examination of the Blood with Albuminuria.**—Roux declares that examination of the blood is indispensable along with other diagnostic measures in kidney disease. It is even more important than the rest, he insists, in many cases in which the main source of the albuminuria is not in the kidneys but is the result of disturbance in the blood, a dyscrasia of the blood. This may be both a cause and an effect, and it should receive adequate attention in treatment. The system must be toned up without intoxicating it, supplying the needed minerals for renovation of the morbid blood corpuscles. Roux practices at the Saint-Nectaire mineral springs, and has had more than 1,000 albuminuric patients taking the waters, and has found in this discovery of the dyscrasia of the blood the explanation of the remarkable benefit from the waters in certain cases. The blood corpuscles may be remarkably resistant, even more so than normal. These are the cases with abnormally high blood-pressure and signs of fibrous degeneration of the kidneys. The unusually high resisting power of the corpuscles seems to be a defensive reaction on the part of the organism, constantly required by the impaired eliminating power of the kidneys. When this extremely pronounced resisting power of the corpuscles is accompanied by persisting and pronounced retention of nitrogen and chlorids or high albuminuria, the prognosis is very grave. The patients are already in progressive toxemia. On the other hand, when the leukocytes display a much reduced resisting power, and the general health keeps good, the kidneys do not seem to be so seriously affected as in the first group, and the prognosis depends mostly on whether the blood can be brought back to normal. Each exacerbation of the kidney trouble is a new menace, but a clinical cure is still possible although there may be persisting slight residual albuminuria as the glomeruli are left unduly porous. It is easier to act on the blood than on the kidneys, he adds, and the tonic and rejuvenating action of mineral waters in these cases is readily explained by their action on the blood, while it is impossible to explain it if we ascribe the albuminuria solely to the changes in the kidney.

He gives the technic with which he determines the resistance or fragility of the leukocytes, mixing first 1 drop of blood with 30 drops of a mixture of 1.5 gm. sodium chlorid, and 1.2 gm. sodium citrate in 300 c.c. of distilled water. After twenty minutes, 2 drops of formaldehyd diluted with its own volume of distilled water are added; the whole is centrifuged, the deposit still moist is spread on a slide by capillary attraction from the pipet; fixed with alcohol-ether, and stained with hematein for ten minutes and eosin-orange for twenty seconds. The resisting leukocytes are round, the nuclei distinct and separate, while the leukocytes that are below par have irregular outlines, the nuclei look blurred and blend more or less together, and they take the stain poorly

40. **Renal Hematuria after Nephrectomy.**—Peña summarizes twenty-two cases of hematuria coming on soon after removal of the other kidney for tuberculosis. It may be the sign of a tuberculous process in the remaining kidney, too slight to have been detected by the diagnostic measures applied, or it may be the work of some ordinary infection or a manifestation of hematuric nephritis. In any event, the prognosis should always be guarded as the course in his cases of this kind demonstrated that the hematuria could not be ascribed to a mere reaction congestion.

Revue de Chirurgie, Paris

July, XXXIII, No. 7, pp. 1-172

42 Transplantation of a Portion of the Tibia to the Spine for Pott's Disease. F. V. Albee (New York).
43 *Fracture of Petrous Bone. (Sur le traitement des fractures du rocher.) H. and A. Nimier.
44 *Metastatic Abscess in the Brain. (Abcès métastatiques de l'encéphale en rapport avec les suppurations hépato-pulmonaires.) Couteaud.
45 *Mercuric Chlorid as a Surgical Disinfectant. (Le sublimé en chirurgie.) E. Marquis.
46 Danger from Ligation of Internal Jugular Vein and Resection of the Pneumogastric. (La résection unilatérale de la jugulaire interne et du pneumogastrique est-elle inoffensive?) P. Guibal.

43. **Fracture of the Petrous Bone.**—Nimier advocates the transmastoid route for access to an extradural hematoma complicating fracture of the petrous bone. If the hematoma is intradural and it cannot be removed by repeated lumbar puncture, the best mode of access is through the temporal bone above the mastoid. This opening can be made first or as an extension of the transmastoid operation. In case of infection, repeated lumbar puncture and decompressive trephining aid in protecting against involvement of the brain, especially when an accompanying or pre-existing otitis has been treated properly, without wasting time on alleged "meningism." Some cases are reported in detail to show the danger from neglect to make a thorough examination when the operation is once decided on. One patient with old bilateral otitis was kicked in the head by a horse, and two operations six months and eight months later seemed to relieve the otitis, which had flared up after the accident, but the patient died and necropsy revealed an abscess in the cerebellum which could easily have been evacuated if the meninges had been incised at the operation.

44. **Metastatic Abscess in the Brain with Liver and Lung Abscess.**—Couteaud reports a case from his own practice and summarizes several other unpublished and published cases, bringing the total to fifteen. The left side and the frontal lobe were most frequently involved. In two cases the brain abscess was secondary to fetid bronchiectasia. To date these metastatic abscesses have invariably proved fatal. In case of ameba dysenteric abscess it is possible that administration of emetin might transform conditions in the primary focus so that evacuation of the metastatic abscess might have a chance for success.

45. **Mercuric Chlorid in Surgery.**—Marquis ascribes to Koch the reputation enjoyed by mercuric chlorid as the "sublime antiseptic." He reviews its history and reports experimental and clinical research, the results of which, he says, have pricked the bubble of its reputation and shown it to be the least penetrating of the surgical disinfectants in vogue and, in spite of its great antiseptic power, to be the least bactericidal of all.

Revue Médicale de la Suisse Romande, Geneva

July, XXXIII, No. 7, pp. 513-576

47 *Mistakes in the Diagnosis of Appendicitis. F. de Quervain.
48 Hemorrhagic Myeloid Leukemia. H. Ter-Barseguian. To be continued.
49 Gas Embolism during Procedure for Artificial Pneumothorax; Recovery. Sillig.

47. **Mistakes in Diagnosis of Appendicitis.**—De Quervain has been examining the records of the different Swiss hospitals during the last five years and has found nearly a hundred cases in which an operation was done on the erroneous diagnosis of appendicitis. In considerably more than half the cases the trouble was some acute surgical abdominal affection which required a laparotomy, so that no harm was done by the operation, but in about twenty cases no operation was actually needed. In seven cases the trouble was really pneumonia; as it commenced with abdominal symptoms it was mistaken for appendicitis. He warns that children are liable to vomit on the slightest excuse, without necessarily having anything the matter with stomach or bowels and they are liable to run up a fever even more readily. Children are also inclined to locate at the umbilicus anything wrong within. The problem is rendered still more difficult by the cases of pneumococcus peritonitis, especially in girls, and liable to follow pneumonia. With older children and adults, the decision to operate is made more readily than for children under 5, while appendicitis is relatively rare under this age. In three cases typhoid fever was mistaken for appendicitis; this is particularly liable to occur when the patient and family give misleading accounts of the antecedents. Whenever the general depression and headache cast doubt on the diagnosis of appendicitis, it is wise to examine the blood for typhoid or paratyphoid bacilli and put away the bistoury. In seven neuropathic cases the patients simulated the symptoms of appendicitis and were needlessly operated on.

He repeats the warning of the English surgeon to be wary in accepting the diagnosis of appendicitis in women when the hymen is not intact. Minor accessory details may suggest the true cause of the disturbances in a spontaneous or criminal abortion: vagueness as to the date of the last menses, and the worried expression of the patient and her fiancé; slight pressure on the breast may cause exudation which clears up the diagnosis at once. In one case a young woman appeared with the diagnosis of appendicitis the day after a ball; her temperature was over 104 F. and face congested. Examination disclosed a staphylococcus peritonitis from recent rupture of a right pyosalpinx. With rupture of a pregnant tube a movable area of dulness develops almost at once, and an effusion can be palpated in the pouch of Douglas, while the tint of the ears, lips and nails shows the anemia. Add to this vagueness as to the last menstruation, and the assumption of appendicitis can be dropped. In conclusion de Quervain says that knowing the dangers of temporizing with true appendicitis, that surgeon is the bravest who does not fear occasionally to run the risk of a false diagnosis.

Semaine Médicale, Paris

July 23, XXXIII, No. 30, pp. 349-360

50 Operative Treatment of Posterior Parametritis and Other Old Infiltrations in the Small Pelvis. W. Falgowski.

Berliner klinische Wochenschrift

July 14, L, No. 28, pp. 1285-1332

51 *Gastric and Duodenal Ulcer; 369 Operative Cases. (Diagnose und chirurgische Behandlung des Magen- und Duodenalgeschwürs.) J. Sherren.
52 *Vomiting of Pregnancy. (Das Erbrechen der Schwangeren.) R. Asch.
53 *Nature of Exophthalmic Goiter. (Theoretischer und experimenteller Beitrag zu einer neuen Theorie der Basedow'schen Krankheit.) J. Marimon.
54 Action of Roentgen Rays on the Agglutinins. E. Fränkel and K. Schilling.
55 Personal Experiences with Friedmann's Remedy; Eighteen Cases; No Improvement. (Persönliche Erfahrungen mit der Friedmann'schen Behandlung der Tuberkulose.) G. Mannheimer (New York).
56 Radiotherapy of Cancer. P. Lazarus.
57 Congenital Myatonia. H. Reiner.
58 The Hard Pulse. (Zum Pulsus durus.) B. Lewinsohn.

51. **Gastric and Duodenal Ulcer.**—Sherren has operated for duodenal ulcer in 190 cases and for gastric ulcer in 179, and reviews this material from the standpoint of diagnosis and indications. Remissions in the pains are peculiarly characteristic of chronic gastric or duodenal ulcer. Days or weeks of the attacks of pain coming on regularly at a certain hour after meals may alternate with long periods of apparently normal digestive conditions. There is nothing pathognomonic of hour-glass stomach except possibly the persistence of the symptoms; after years of intermittent dyspepsia, the disturbances gradually become practically continuous. There was no free acid in seven of his nineteen cases of hour-glass stomach and the acidity was subnormal in eleven of the thirteen tested. Only four of the nineteen were men. In only 123 of his 160 cases of chronic duodenal ulcer were the symptoms characteristic; the others suggested gall-stone

trouble or gastric ulcer. Hunger pain was present in all but twenty of 146 cases; in the intervals the patients felt entirely well. Anger, chilling and overwork are liable to bring on an attack. In one group there was absolutely no pain at any time; the symptoms consisted merely of attacks of dilatation of the stomach with vomiting, alternating with intervals of complete health. There was excess of free acid and the total acidity was high; the opposite is the rule in cases with similar symptoms due to gall-stone or coprostasis.

Before any operation on the stomach for a chronic condition he has the mouth carefully supervised and decayed teeth treated; beginning twenty-four hours beforehand only sterilized food is allowed. Afterward the patient is allowed to drink freely. Vomiting is unusual. He impresses on the patient the necessity for care in the diet for three months, avoiding roast beef, ham and bacon, and taking between meals a teaspoonful of a powder containing equal parts of sodium bicarbonate, magnesium carbonate and bismuth oxycarbonate. Hematemesis was the first symptom of trouble in 75 per cent. of the young women patients but it seldom proved fatal. He never operates for this alone, but when there is bleeding from a chronic gastric or duodenal ulcer, this calls for operative measures without delay. He declares that the danger from this tardy and grave complication of a chronic ulcer is not appreciated as it deserves. The hemorrhage may be fulminating; as a rule it stops spontaneously but returns later and proves fatal. The operation should be done as soon as the condition permits, not later than thirty-six or forty-eight hours, keeping the stomach absolutely quiet in the interim.

52. **Vomiting of Pregnancy.**—Asch thinks that the vomiting of pregnancy is readily explainable by various factors which cooperate in its production and which are generally under our control, so that it is possible to ward off serious trouble from this cause. The nausea experienced by some persons in swinging or riding in a merry-go-round is a reflex phenomenon, not a neurosis, and the vomiting of pregnancy is a similar reflex phenomenon. The existence of the pregnancy, the germinating ovum, has a tendency to upset the training of civilization and bring back a reversion to primitive reflexes. Another factor at work is the dread of the burden of responsibility a child brings with it; the pregnancy may be unwelcome, and these psychic factors depress the appetite and upset the digestion. When vomiting has once occurred, it occurs afterward more readily, as a memory process.

Another factor in the loss of appetite, he explains as *Ueberhungertsein*, that is, the loss of appetite which follows when one is overfatigued or does not eat when hungry. After a certain period the sensation of hunger subsides. The pregnant woman needs nourishment for two, but if her hunger is not satisfied at the proper time, she loses her appetite; if then she eats from duty or custom, without appetite, she is liable to neglect proper mastication and the stomach does not do its work properly in turn. As the pregnant woman needs more nourishment than under other conditions, the ordinary intervals between meals are too long for her, and by the time the meal arrives she has lost her appetite owing to the *Ueberhungertsein*. Added to all this is the fact that in our civilization the natural instincts are deadened, the reflexes sluggish in comparison to primitive peoples. Tobacco, for example, usually induces nausea when used for the first time, but not after one has become used to it. A pregnant woman, however, is liable to feel nausea at the smell of tobacco when at other times she may even, herself, enjoy smoking.

The pregnant woman does not realize that she needs more nourishment; her reflexes are deadened by the customs of civilized life, but she should eat oftener than at other times, and experience has shown that she tolerates better meals of either fluid or solid food, not the two combined. Asch therefore orders her to eat at intervals of two and a half hours, alternating fluids and solid food, not drinking at meals with the latter, but drinking copiously at other times. Before going to bed and if she is wakeful at night he orders something light, not requiring much chewing as this is liable to induce wakefulness. If there is nausea when she sits up first in bed in the morning—which he ascribes to anemia of the brain, as in seasickness—he has her take through a tube or otherwise, while still reclining, a glass of milk or cup of coffee, chocolate, tea or soup and lie still for fifteen or twenty minutes afterward. If there is a distaste for anything of the kind, a glass of hot Vichy or other water might inaugurate the custom. In some cases the vomiting comes on for the first time in the morning as the teeth are brushed; in these cases treatment of the accompanying catarrh of the throat will generally put an end to all trouble. The meals can be eaten reclining, and reclining after meals is useful, as also application of heat, a thermophor. In one almost desperate case he tided the patient past the danger period by feeding exclusively with frozen hard milk, coffee, apple sauce, ice cream, etc., all frozen hard.

Great evil is often done by the accounts of the experiences of friends and the advice of relatives, keeping up the memory of vomiting and bringing back the nausea. There is still another group of cases in which the vomiting is a reflex from contracture of the cervix. Dilatation of the os is often followed by relief from all symptoms and the pregnancy persists undisturbed. If this and all else fails, the dilatation can be repeated and Nature left to evacuate the uterus.

53. **Theory of Exophthalmic Goiter.**—Marimon presents arguments to sustain the view that myxedema and exophthalmic goiter are due to the same cause, insufficient thyroid functioning. The former is the result of defective utilization of the iodin assimilated from the food and metabolized in the liver or elsewhere. Exophthalmic goiter, on the other hand, is the result of injury from iodin getting into the blood insufficiently metabolized. This assumption explains the coincidence of myxedema and exophthalmic goiter, which he has frequently observed and which it is impossible to explain by the current theory that myxedema is the result of hypothyroidism and Basedow of hyperfunctioning. As he remarks, a glass cannot be full and empty at the same time.

Correspondenz-Blatt für Schweizer Aerzte, Basel

July 12, XLIII, No. 28, pp. 865-896

59 Technic for Diagnostic Inoculation of Animals. (Die Anwendung der intrakutanen Tuberkulinreaktion als Hilfsmittel zum beschleunigten Nachweise von Tuberkelbazillen im Tierversuch.) W. Schürmann.
60 Influence of Climate and Race on the Genital Sphere of Women. (Einfluss des Klimas und der Rasse auf das weibliche Geschlechtsleben.) M. Steiger.

Deutsche medizinische Wochenschrift, Berlin

July 10, XXXIX, No. 28, pp. 1345-1392

61 Migrating Cells in the Cornea. (Wanderzellenbildung in der Hornhaut.) P. Grawitz.
62 *Etiology of the Acute Psychoses. L. W. Weber.
63 Salvarsan in Progressive Paralysis. Raecke.
64 Intravenous Injection of Camphor. W. Weintraud.
65 Copper and Gold Salts in Tuberculosis. (Chemotherapeutische Versuche bei Lungentuberkulose.) S. Pekanovich.
66 Liver Disturbances in Experimental Trypanosomiasis. (Ueber Lävulosurie sowie neuartige Serum- und Leberstoffe bei Trypanosomiasis.) K. Schern and H. Citron.
67 *The Hemorenal Index as Test of Kidney Functioning. (Bestimmung des hämorenalen Index als Prüfung der Nierenfunktion.) R. Bromberg.
68 *Syphilis and Neurasthenia. W. Krebs.
69 Special Care Necessary in Management of Delivery with Hypoplasia of Vascular System. (Die geburtshilfliche Bedeutung des Status hypoplasticus.) E. Vogt.
70 Foreign Bodies in the Esophagus. (Zur Bewertung der Methoden der Extraktion von Fremdkörpern aus der Speiseröhre.) A. Wagner.
71 *The Children of the Tuberculous. W. Weinberg.
72 Fecundation During Alcohol Intoxication. (Die Zeugung im Rausche.) P. Nacke.
73 Diathermia in Treatment of Deafness from Middle-Ear Disease. (Behandlung der Schwerhörigkeit nach Mittelohrerkrankungen mittels Diathermie—Otothermie.) Hamm.

62. **Acute Mental Disease.**—Weber refers in particular to the psychoses which have a sudden onset and fulminating course with fatal outcome, and describes several cases of this type. In one, a young man of 27, free from syphilis and drinking habits, had several attacks of influenza and as the last attack subsided developed an acute and fatal psychosis. Necropsy in this as in the other cases revealed a combination of several morbid processes none of which alone could explain the acute psychosis, but their superposed action on an old chronic cerebral affection was responsible for the acute mental disease. The cerebral affection although chronic had evidently been so mild that it had caused no functional dis-

turbances, notwithstanding its diffuse character. Only when some acute injury was superposed, as from a trauma, intoxication, infection, or affection of other organs, especially of the cardiovascular system, did the brain break down. The chronic cerebral affection found in the above cases was a diffuse chronic fibrous leptomeningitis or diffuse arteriosclerosis of the cerebral vessels. The latter may be disclosed only by the microscope. The leptomeningitis may date from some infectious disease in childhood; it is possible that a similar combination of several injurious factors may be responsible for other forms of mental disease.

67. **The Hemorenal Index as Test of Kidney Functioning.**—Bromberg gives an illustrated description of his apparatus to determine the relative electric conductibility of the blood and urine as a means of demonstrating their content in inorganic salts. In health the ratio of concentration in the urine and blood is as 2 to 1. If the ratio is 1.5 or less with bladder urine, both kidneys are probably diseased; if the urine from the ureter catheter on the sound side shows a ratio of 2 or even 1.8, the diseased kidney can be removed without hesitation. The amount of resistance offered by the fluid under examination to the electric current is the principle on which the test is based; only 0.5 c.c. of urine and 0.5 c.c. of blood serum are needed for the comparative test. He says that the instrument described enables the test to be applied in the easiest and simplest manner and that the findings are more reliable than with any other technic.

68. **Syphilis and Neurasthenia.**—Krebs is convinced that the causal agent of syphilis is responsible not only for the tardy anatomic injury of the central nervous system manifested in paralysis and tabes, but that it is also directly responsible for the neurasthenia which he found marked in 43 per cent. of his 114 syphilitic patients with neurasthenia or other functional nervous affection. On the other hand, only 18 per cent. of 1,000 patients in other categories had symptoms of neurasthenia. The practical conclusion follows that the Wassermann test should be applied to all neurasthenic patients when there can be the slightest suspicion of syphilis; in case of a negative response, he advises to test the cerebrospinal fluid. If the reaction is positive, antisyphilitic treatment should be instituted in combination with general tonic measures and measures addressed to the nervous system. He thinks that syphilitics should take a a regular four-weeks' course of treatment every year even when they are free from symptoms, and more when symptoms develop. Repetition of the Wassermann test is not so imperative.

71. **The Children of the Tuberculous.**—Weinberg has records of 5,000 families with one or more tuberculous members and a total of 18,000 children whose history is known until their twentieth year. This material is analyzed from various standpoints; it confirms the special danger of contact infection.

Deutsche Zeitschrift für Chirurgie, Leipsic

CXXII, Nos. 3-4, pp. 171-358

74 Ultimate Outcome of Radical Operative Treatment of Tuberculous Knees in Adults. W. May.
75 Retrograde Incarceration with Hernia. (Retrograde Darmeinklemmung bei Brüchen.) v. Wistinghausen.
76 Decompressive Craniotomy with Primary Plastics by Twisting the Bone Flap Slightly Askew. U. Stoppato.
77 Tumors in Tendon Sheaths. (Die bisher als Riesenzellensarkome bezeichneten Granulationsgeschwülste der Sehnenscheiden.) J. Fleissig.
78 Radical Operation for Hernia with Incomplete Hernial Sac. (Darmgleitbrüche.) M. Schmidt.
79 Atrophy of the Prostate Induced Experimentally by Roentgen-Ray Exposures. J. Sasaki.
80 Hemorrhage from Isolated Tear in Phrenic Artery. A. Reinhardt.
81 Cure of Ischemic Contracture by Transplantation of Muscle. R. Göbell.
82 Drain Tube for Artificial Common Bile Duct. F. Cahen.
83 Case of Primary Tuberculosis of the Gums. H. v. Tappeiner.

Medizinische Klinik, Berlin

July 13, IX, No. 28, pp. 1105-1148

84 *Treatment of Retroflexion of the Uterus. O. v. Franqué.
85 *Acute Infections in Infants. E. Müller.
86 *Hitherto Overlooked Factors in Nutrition. (Einige bisher in der Physiologie und Pathologie der Ernährung noch nicht berücksichtigte Faktoren.) H. Schaumann.
87 The Respiration as Aid in the Circulation. (Bedeutung der Atmung als Auxiliarkraft des grossen Kreislaufs.) L. Hofbauer.
88 *Arteriosclerosis before Thirty. M. Hirsch.
89 *Color Test for Albumin. (Eine Farbenreaktion auf Eiweisskörper.) L. Lewin.
90 Pulmonary Tuberculosis and Northern Seashore. (Lungentuberkulose und Nordseeklima.) Ide.
91 Hemolytic Jaundice. (Gibt es einen echten hämatogenen Ikterus?) J. W. McNee.

84. **Retroflexion of the Uterus.**—Franqué insists that retroflexion does not need correction unless it is causing symptoms, as a rule; indiscriminate treatment in every case, even in virgins, may do great harm. The wearing of a pessary is liable to bring on catarrhal conditions and often entails posterior parametritis and pelveoperitonitis. He knows of one physician who systematically corrects retroflexion by vaginofixation or ventrofixation; he could write a book on the later disturbances in childbed resulting from his hundreds of such operations. Many of the patients afterward came into Franqué's service, still complaining of their old trouble or with new ones superposed. Even the Alexander-Adams operation does not always correct the trouble and, if it does, does not always cure the disturbances because the retroflexion was not responsible for them in the first place. Examination of women long after treatment for retroflexion shows that they are rarely cured of their old troubles, while systematic abstention from any treatment in a series of cases will show that the women do equally well without any local measures. The exceptional cases in which treatment is justified are the rare instances of traumatic dislocation of the uterus with an inflammatory reaction. Here the uterus must be restored to normal place on account of the danger of its becoming bound down by adhesions.

Franqué emphasizes that the normal retroflexed uterus is unable to exert pressure on the rectum or the sciatic plexus as it is too small; trouble is liable only when there is inflammation or when the uterus is enlarged from chronic metritis, tumors or pregnancy. Even the pregnant uterus presses only on the bladder and urethra, as a rule; if the retroflexion of the gravid uterus is discovered before serious symptoms have resulted, it is sufficient to straighten it and, up to the fourth month, introduce a pessary, if this can be done with ease. If not, the uterus may gravitate into normal place if the woman assumes the knee-elbow position or the lateral-abdominal position with the pelvis raised. If this fails, the elastic pressure of a colpeurynter in the vagina will generally answer the purpose. Of course acute symptoms on the part of the bladder call for more active measures, emptying the bladder, straightening the uterus and introducing a pessary, under general anesthesia at need. Retroflexion discovered during the puerperium should also always be corrected and can generally be cured by wearing a pessary for six months to a year. The displacement in these cases may first reveal itself by hemorrhage in the second up to the sixth week after delivery. These hemorrhages stop at once when the uterus is straightened, and ergot and hot vaginal douches are given. Other conditions generally demanding treatment are when with the retroflexion there is prolapse, sterility or habitual abortion. Nervous dyspepsia and gastric symptoms in general he does not regard as indications alone for correction of retroflexion. It is best not to call the patient's attention to her retroflexion. Dysmenorrhea likewise is scarcely ever the direct consequence of uncomplicated retroflexion.

85. **Acute Infections in Infants.**—Müller remarks that the lime-light of attention has shifted in the last few years from the difficulties of infant feeding to the dangers of acute infections for infants. Many of the old febrile "digestive disturbances" are now known to be the work of infection. Some of the known air-borne infections manifest themselves mostly by intestinal symptoms. The purely intestinal affections of infants have constantly lost ground, while among the parenteral, infection by way of the air is becoming more and more important as infection by contact grows less frequent.

The complex of infections which we call influenza is particularly noxious for infants; the influenza may manifest itself with a catarrhal fever and inflammation in the air passages; or it may induce predominantly intestinal symptoms, or the syndrome may be merely an intermittent fever without other

symptoms but suggesting a septic course, probably due to general toxemia. Influenza is air-borne, as a rule, and partitions a little over six feet high seem ample protection. Glass "boxes" of this kind to isolate the infants have answered the purpose of protecting against all these air-borne infections except chicken-pox; the germ of this seems to be so light that it does not settle down in the quiet air of the "box" but floats off over the partitions. Meyer has recently reported that children suffering from recurring influenza suddenly began to thrive when they were placed in "boxes."

Another evil of influenza is its frequent connection with diphtheria. In his service, throat diphtheria is very rare in infants but numbers of the little ones are carriers of diphtheria bacilli. In many instances, the "coryza of infants" is really a combination of influenza and diphtheria; the nasal secretion is usually bloody-purulent in these cases. The gravity of such a combination is obvious, and the necessity for bacteriologic examination and antitoxin treatment. The latter seldom cures but at least it prevents the spread of the diphtheria to the throat. Infants seem particularly susceptible to whooping-cough, and the course and effects are exceptionally serious in them, especially in the rachitic. The exudative diathesis predisposes to pertussis, but in his experience the manifestations did not seem to be more severe in the children inclined to spasmophilia than in others. In all cases of acute infection in an infant, the first and main points are to protect it against new infections, to isolate it and to keep it in a sunny room; the sunlight is a particularly powerful disinfectant in respect to influenza.

In conclusion he calls attention to the variation in the character of epidemic infections at different times, and reiterates anew the importance of paying less attention to the intestines of infants and more to their general infections.

86. **Recently Discovered Factors in the Physiology and Pathology of Dietaries.**—Schaumann was one of the pioneers in the research on dietary antineuritic factors, and he here reviews his own and others' work in this line to date. (THE JOURNAL has editorially reviewed the outcome from time to time as, for instance, in the issue for May 17, 1913, page 1543.) Schaumann thinks it is a significant fact that the proportion of phosphorus in the brains of pigeons with polyneuritis was found abnormally small. His continued research has confirmed the relatively minute proportion of these antineuritic substances in the food; also that they are present in most articles of diet but are readily removed or destroyed. Rice and other cereals lose them by polishing, and they are destroyed in other articles of food by heating above a certain point or long cooking, by desiccation and by pickling, by boiling in excessively alkaline water, by mouldiness, and possibly by the action of the intestinal flora. The disturbances which result from lack of this protecting substance or substances take different forms in different living beings: A herbivorous mammal develops scorbutus, an omnivorous mammal a mixture of scorbutus and neuritis, while goats, monkeys, fowls and pigeons develop multiple neuritis.

The practical conclusions from all the research reported are that the dietary of man must comprise not only the familiar carbohydrates or fat, protein, mineral elements and water but it must include minute amounts of these still unisolated substances which are of vital importance. It must further contain albumin with a certain amino-acid content, especially tryptophan and tyrosin. The lack of one or more of these still unisolated substances is liable to entail certain single or combined metabolic disturbances. All this throws light on the diseases of deranged metabolism in which he includes rachitis, pellagra, beriberi and scorbutus.

88. **Arteriosclerosis Before Thirty.**—Hofbauer thinks that the reports of cases of arteriosclerosis in children must be regarded with considerable doubt. Those reported between 20 and 30 are more worthy of credence, and he is convinced that many cases labeled neurasthenia were in reality cases of arteriosclerosis in adults under 30. The unfavorable prognosis generally associated with arteriosclerosis is due to the fact that it is not diagnosed until irreparable lesions are already installed; if we watch for its incipient manifestations earlier in life, there is no doubt that we can cure or at least keep it under control.

89. **Color Test for Albuminoids.**—Lewin calls attention to the delicacy and reliability of the color reaction which follows when dissolved albumin is treated with a mixture of 0.1 to 0.15 parts trioximinomethylen in 100 parts crude sulphuric acid. Even a 0.02 per cent. solution of egg albumin shows the characteristic violet tint.

Münchener medizinische Wochenschrift

July 15, LX, No. 28, pp. 1529-1584

92 *Photodynamic Action of Mineral Pitch. (Photodynamische Wirkungen von Inhaltsstoffen des Steinkohlenteerpechs am Menschen.) L. Lewin.
93 *The Biologic Test for Pregnancy. (Ueber künstlich herbeigeführte und natürlich vorkommende Bedingungen zur Erzeugung der Abderhaldenschen Reaktion und Ihre Deutung.) E. Heilner and T. Petri. (Studien über die Spezifität der Abwehrfermente.) A. E. Lampé and L. Papazolu. (Natur des bei der Abderhaldenschen Reaktion wirksamen Fermentes.) Z. Steising.
94 Interchange of Nutrients between Rats in Parabiosis. P. Morpurgo and G. Satta.
95 Intradermal Reaction in Syphilis and Frambesia. G. Buermann and H. Heinemann.
96 Rise in Temperature in Rectum. A. Weinert.
97 Extension for Fracture of Upper Arm. T. Christen.

92. **Photodynamic Action of Mineral Pitch.**—Lewin had his attention called to an itching and smarting affection which developed on the exposed portions of the skin in 103 persons engaged in an establishment making electric appliances. Those affected had to handle coal tar pitch, and the itching occurred only while the parts were exposed to the light. Only 15 of the total 103 complained of itching in the dark. The substance was known to have fluorescent properties; the photodynamic properties of fluorescent substances have recently been emphasized by several scientists. This is the first instance known, however, of a photodynamic action from coal tar. A mild ointment or washing with diluted sapo medicatus soon reduced the itching; washing otherwise had a tendency to exaggerate the itching.

93. **The Biologic Tests of Pregnancy, Etc.**—Laboratory workers everywhere are now hard at work on Abderhalden's "protective-ferment" tests for pregnancy, cancer, etc. Heilner and Petri conclude from the results of their research that positive findings are merely the result of the getting into the blood of some of the individual's own albumin which has retained its chemical individuality. It is immaterial how this albumin gets into the blood; it may be from a hematoma from any source, a crushing injury, inanition, fever, infectious disease, cancer, cachexia—any of these is liable to entail the passage of some unmodified albumin into the blood and the consequent positive reaction. There is nothing specific about it, they state, beyond this.

Lampé and Papazolu applied the test to twenty-five patients with exophthalmic goiter and three with simple goiter, and to a few patients with nephritis or diabetes. The findings indicate that the thyroid secretion, the thymus secretion and also the ovarian secretion are perverted in exophthalmic goiter.

Steising announces that he has succeeded in separating the active ferment into an amboceptor and a complement part; this permits the use of old serums for the test, and renders the technic much more generally applicable. He inactivates the serum by heating to 58 C. for an hour and then reactivates it as desired by addition of fresh male serum. (See Editorial in THE JOURNAL, Aug. 16, p. 493.)

Wiener klinische Wochenschrift

July 17, XXVI, No. 29, pp. 1193-1232

98 Case in which Atropin Had the Reverse of its Usual Effect. (Ueber inverse Atropinwirkung.) R. Kaufmann and H. Donath.
99 *Radium Treatment of Malignant Tumors. A. Exner.
100 Multiple Primary Malignant Tumors. A. Krokiewicz.
101 Mechanism of Staining of Cells. (Zur Physikochemie der Zellfärbung.) P. v. Szily.
102 No Influence from Salvarsan in Case of Rabies. (Erfolglose Anwendung von Salvarsan bei Lyssa.) L. v. Zumbusch.
103 Congenital, Unilateral Paralysis of Cervical Sympathetic. E. Pollak.
104 Fatal Sepsis after Extraction of Tooth. (Die Kiefertrepanation bei dentalem Markabszess.) B. Mayrhofer.
105 Heliotherapy in Surgical Tuberculosis. M. Jerusalem.

99. **Radium Treatment of Cancer.**—Exner has found it possible to enlarge the passage with cancer of the esophagus by treatment with radium, and has thus treated twenty patients. In two cases the cancer perforated into the trachea or mediastinum, and it is possible that this might not have occurred, at least quite so soon, without the radiotherapy. His experience with radium as also with roentgenotherapy has apparently demonstrated that weak dosage, inadequate exposures, have a stimulating influence on the growth of the cancer. In a few instances severe hemorrhage has followed the exposures. He has applied the radium treatment in forty cases of cancer elsewhere and reported in 1910 a permanent cure since 1904 and 1905 in two cases of almost inoperable carcinoma of the buccal mucosa and jaws or upper lip. These are the only ones of the forty patients with deeply rooted cancer who have remained free from recurrence for more than three years after the exposures and both of these have died recently of recurrence, fatal in a few weeks in the first case, after nine years of health. The other patient had a recurrence after seven years but this was apparently subsiding under renewed radium treatment when the woman died of acute phthisis. Of the rest of his material he was able to keep twenty patients in comparatively good health for three or four years and a few for five or seven, when they were evidently otherwise doomed to die of their malignant disease in a few months. Exposure to adequate doses of the therapeutic rays causes an intense proliferation of connective tissue around the growth, thus walling it in, as it were, and preventing the spread to the lymph-nodes in the vicinity. In cases of cancer of the tongue and pharynx in which, under other conditions, the connected lymph-nodes become rapidly involved, they were not invaded. This absence of metastasis apparently confirms the assumption that the efferent lymphatics become impermeable under the influence of the radiotherapy.

Zeitschrift für Geburtshülfe und Gynäkologie, Stuttgart

LXXIII, No. 2, pp. 335-630. Otto Küstner Festschrift. Last indexed August 2, p. 376

106 Obstetrics and Prevention of Infant Mortality. (Geburtshilfe und Säuglingsfürsorge.) A. Keilmann.
107 Changes in the Liver during Pregnancy. (Leberveränderungen in der Schwangerschaft.) E. Opitz.
108 Connection between Inflammation of the Large Intestine and the Female Genital Organs and Functional Neuroses. E. Opitz.
109 The Metreurynter with Myoma Complicating Delivery. (Hystereuryse bei Myom unter der Geburt.) A. Christiani.
110 The Question of Sterilizing Tuberculous Women. (Tuberkulose und Gravidität.) G. Stütz.
111 *Operative Treatment of Peritoneal and Genital Tuberculosis. O. Schmidt.
112 *Experiences with Eclampsia; Ninety-eight Cases. O. Schmidt.
113 Cystic Kidneys and Pregnancy. F. Hensius.
114 Cystoscopic Diagnosis of Ureter Stone and its Extraction by Way of the Vagina. F. Heinsius.
115 Induced Premature Delivery in Management of Moderately Contracted Pelvis. (Erfolge der künstlichen Frühgeburt beim engen Becken mittleren Grades.) W. Ponfick.
116 Tumor on the Buttocks (Steisstumor.) A. Heyn.
117 Vaginismus is merely a Psychic Reflex or Phobia. (Ist beim Vaginismus eine blutige Erweiterung notwendig?) H. Rothe.
118 Extraction of Fetus with Breech Hook. (Zur Extraktion mit Küstners Steisshaken.) A. Strempel.
119 *Prophylactic Treatment of Eclampsia in Wage-Earners' Homes. (Eklampsiebehandlung nach Stroganoff in der Arbeiterwohnung.) A. Strempel.
120 Postoperative Ileus. G. Schubert.
121 *Importance of Gonorrhea in the Modern Management of the Puerperium. (Bedeutung der Gonorrhoe für die moderne Wochenbettsdiätetik.) W. Hannes.
122 Internal Secretion of the Ovaries and its Relation to the Lymphocytes. F. Helmann.
123 Intra-Uterine Amputation of the Thigh with Closure of Urethra and Rectum. H. Küster.
124 Importance for Delivery and Puerperium of Early Rupture of Fetal Membranes. (Bedeutung des frühzeitigen Blasensprunges für Geburt und Wochenbett.) R. Basset.
125 Bacteriologic Examination with Extraperitoneal Cesarean Section. O. Bondy.
126 Vaginal Germs and Endogenous Infection. O. Bondy.
127 *Experiences with Eclampsia; 158 Cases. W. Rohrbach.

111. **Operative Treatment of Peritoneal and Genital Tuberculosis.**—Schmidt tabulates the details of thirty-eight operative cases. Two of the patients were moribund and ten others have died since, but twenty-three were restored to health by the operation. Four of the patients were between 15 and 20; twenty-one between 20 and 30, and the oldest patient was over 70. Nineteen are living of the twenty-four patients not given drainage, and four of the thirteen with drainage. One patient with a tuberculous process in the uterine mucosa recovered after curetting alone; another after abdominal hysterectomy; another with a secondary peritonitis but no ascites recovered after curetting and a laparotomy, as also another with effusion, given a supplementary posterior colpotomy. A patient with a tuberculous process in both uterus and tube recovered after panhysterectomy. The laparotomy also cured another patient with a tuberculous tube and peritonitis with effusion. Two patients with tuberculous peritonitis without effusion and tuberculous processes in both adnexa were cured by an operation on the adnexa alone; two others with the same plus effusion, treated by an operation on the adnexa, died, as also two of five after a laparotomy (one moribund).

112 and 119. **Eclampsia.**—Schmidt thinks it is more than a mere coincidence that 6 women succumbed to eclampsia in his service in 1912, while only 3 of 17 died during 1911, although all were treated on the same principles. In his total 98 cases, 1907-1912, 23.47 per cent. of the patients died, including 12 of the 71 intrapartum cases; 2 in the 2 pregnancy cases, and 2 in the 15 post-partum cases. The mortality was 13.3 per cent. in the 15 cases with spontaneous delivery; 24 per cent. in the 45 operative cases; 13.04 per cent. in the 23 cases in which Stroganoff's method was applied and delivery was spontaneous, and 46.66 per cent. in the 15 Stroganoff cases with artificial delivery. It is possible, he remarks in conclusion, that venesection at once, on commencing the Stroganoff expectant, prophylactic treatment might improve the outcome.

Strempel protests against the general assumption that the Stroganoff method cannot be applied in the home but must be reserved for institutions, and relates his experience with four cases in which he applied this method in a wage-earner's home with complete success. He leaves the medicine with written directions for the doses, by the clock, impressing on the family the necessity for keeping the room dark and protecting the patient against noises and other external influences. A rectal syringe holding 10 gm. is left for giving the solution of chloral, one to four syringefuls as ordered. When the patient becomes able to swallow, the medicine is given in the same number of tablespoonfuls by the mouth. The morphin is also given in powder or solution in the same way except when he is at hand to administer it by subcutaneous injection. He keeps in constant telephone communication with the family, and when any change is reported, speeds at once to the patient. The success in the cases reported, with the aid only of the husband or midwife, was certainly brilliant, he declares, and justifies the adoption of the method by the general practitioner, possibly preceded or accompanied by venesection. (The details of the method were given in THE JOURNAL, July 3, 1909, p. 86.)

121. **Importance of Gonorrhea in Management of the Puerperium.**—Hannes warns that an old or latent gonococcus infection is liable to flare up and spread after delivery, and that this is a most cogent argument against allowing women to leave the bed soon after a childbirth. It is extremely important, further, on this account to distinguish which women already have gonococci before delivery; he makes a practice of having the women examined for gonococci just before delivery, and found them in 4 per cent. of 1,753 pregnant women in the last year and a half. These women are then supervised with special care. Even this does not reveal all those affected. In some other women supposedly free from gonococci and allowed to get up at the usual time, the temperature suddenly ran up and gonococci were then found in the lochia. On suspicion of gonococci, internal examinations should be scrupulously avoided, and the women should be kept absolutely quiet in bed for at least two weeks.

127. **Eclampsia.**—In this communication from Küstner's service, 158 cases of eclampsia are analyzed and the conclusion emphasized that the prognosis seems to be more favorable the sooner the delivery is completed. Early and rapid delivery is hence the basis for treatment. Rohrbach warns on principle against venesection before delivery, as one never knows how much blood is going to be lost intra partum. But

after delivery he regards it as a most important aid; he thus applied it thirty-seven times in thirty cases of eclampsia in the last six years, withdrawing 400 or 500 c.c. of blood at a time. Treatment after delivery is based on daily tests of kidney functioning and the pulse. Of the sixty-five patients with eclampsia before or during delivery, in the last six years, 16.92 per cent. died and 13.63 per cent. of the twenty-two women with post partum eclampsia.

Zentralblatt für Chirurgie, Leipsic

July 19, XL, No. 29, pp. 1137-1168

128 *Spreader to Hold Open Suppurating Process. (Verwendung von Spreizfedern bei der Behandlung eitriger Prozesse.) M. Tiegel.
129 Technic for Operative Treatment of Hydrocele. Müller.

128. **Spring Spreader to Hold Open Suppurating Processes.**—Tiegel has found very useful a little retractor with spring which holds the lips of a phlegmon apart after its incision and permits the escape of the thick secretions without the injury of tissues almost inevitable with other methods of treatment. Application of the spreader for even twelve hours transforms a phlegmon on the hand into a rapidly healing process, much shortening its duration and leaving the functioning unimpaired. He devised the little instrument for suppurating processes on the fingers in particular, but found it so useful that he now applies it regularly in mastitis, abscesses in the neck or around the kidney, etc. An illustration of it is given.

Zentralblatt für Gynäkologie, Leipsic

July 19, XXXVII, No. 29, pp. 1061-1100

130 *Unusual Fertility in Women. (Kasuistischer Beitrag zur Frage der ungewöhnlichen Fruchtbarkeit des Weibes.) F. v. Neugebauer.
131 Histologic Findings in Placenta in Determination of Age of Pregnancy. H. Peters.

130. **Unusual Fertility of Women.**—Neugebauer relates several instances from his own practice in which women passed through from twenty to twenty-four pregnancies, and mentions a case on record with thirty-five. In one of his cases after twenty-two uterine pregnancies came an extra-uterine. One of his relatives had twenty-four pregnancies and lived to a great age and ten of her children still survive.

Policlinico, Rome

July 13, XX, No. 28, pp. 989-1028

132 *Prophylaxis of Hereditary Syphilis in Foundling Asylums. (La profilassi dell' eredo-sifilide nei brefotrofi.) A. Gallico.

132. **Prophylaxis of Inherited Syphilis in Foundlings' Asylums, Etc.**—This entire number of the *Policlinico* is devoted to syphilis, with summaries of the more important recent articles on the subject in international literature. Gallico's is the only original article, and he states that the experiences with the Wassermann test have been most disappointing in infants' asylums. It was hailed especially in these institutions as promising to solve the ever-pressing question as to whether a foundling has a syphilitic taint or not, and thus whether it can be given to a healthy wet nurse or whether it is safe to give it to a syphilitic wet nurse. The test has proved a great disappointment. During the ten years 1901-1910, 3,432 infants were received and only 202 had unmistakable signs of syphilis. Of this group only thirty-nine developed symptoms during the first ten days; eighty-three between the tenth and twentieth day; three between the eightieth and ninetieth days; one not until after four months and one after five months. The Wassermann test was applied in sixty-four cases in which the ultimate history of the child was learned. In six cases the reaction was positive and the children developed symptoms later; in twenty-seven cases the response was negative and the children have never shown any signs of syphilis. In thirty-one cases, however, the response was negative and yet the course of the cases or the necropsy findings revealed unmistakable syphilis. Similar contradictory findings have been reported in Italy by Dalla Favera, Flamini, Serra, Gentile, Fua and Pennato. Some report a positive reaction when nothing at the time or during the years since has indicated the presence of syphilis.

Examination for the spirochetes is also misleading as they are discoverable only in accessible lesions. Forty-six of the children who were rather above the average size and weight developed symptoms of syphilis later. At present, he says, the only guarantee of approximate safety is to wait for fifteen up to forty days before deciding whether the infant is syphilitic or not; by the end of this period the question is generally decided one way or the other. Science to date has nothing better to offer.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

June 14, LVII, No. 24, pp. 1700-1790

133 *Value of the Syphilitic Index in Syphilis. (De Waarde van den Luetischen Index bij Lues en Paralues.) B. P. Sormani.

June 21, No. 25, pp. 1791-1878

134 Experiences with Meltzer's Intratracheal Insufflation. W. S. van Leeuwen.

June 28, No. 26, pp. 1879-1986

135 Separation of the Epiphysis of the Head of the Femur. (Loslating der Epiphyse van het Caput Femoris.) L. M. Metz.
136 *Pathogenesis and Treatment of Epilepsy. G. C. Bolten. Commenced in No. 25.

133. **Practical Importance of the Syphilis Index.**—Sormani's modification of the Wassermann reaction gives a definite index for the syphilis, and not only a qualitative but also a quantitative analysis; thereby serving as a guide in the treatment of the disease. This syphilis index has much in its favor in comparison to the opsonic index. It is delicate; gives always the same results; has a prognostic value, and in many instances indicates the stage of the disease. Sormani claims that the test deserves the name he has given it on account of its importance and practical value.

136. **Epilepsy Due to Insufficient Thyroid Functioning.**—In this lengthy article Bolten sets forth that "genuine" or essential epilepsy is a toxicosis caused by normal food-products, as well as by chemical cell products, when these products fail to be sufficiently neutralized by the action of the thyroid and parathyroid glands which normally serve to protect the central nervous system against toxins. The insufficiency of the glands in this protecting function may be secondary, due to some derangement of some part of the sympathetic nervous system. The changes found in the brain cortex are secondary, and are the result of the chronic intoxication. He declares that essential epilepsy is curable by thyroid treatment. By injections of fresh juice expressed from the thyroid and parathyroid glands of beef cattle, it is possible to cause a complete disappearance of the symptoms of essential epilepsy. He adds, however, that in many cases it is impossible to distinguish between essential and symptomatic epilepsy.

Hospitalstidende, Copenhagen

July 23, LVI, No. 30, pp. 821-844

137 Efficacy of Carbon Dioxid Snow in Treatment of Lupus Erythematosus. (Behandling af Lupus erythematosus ved Frysning med Kulsyresne.) P. Haslund. Commenced in No. 29.

Ugeskrift for Læger, Copenhagen

July 17, LXXV, No. 29, pp. 1220-1246

138 *Avoidable Cause of "Salt Fever" in Infants. (Undersøgelser over Kogsaltfeber hos spæde Born.) G. Jörgensen.

138. **Salt Fever in Infants.**—Jörgensen reports experiences and experimental research which have apparently established that the rise in temperature in infants after injection of salt solution is due to the same cause as the somewhat similar disturbances observed after injection of salvarsan in some cases, namely, to contamination of the water vehicle by the presence of toxic substances from the bodies of bacteria in the water. The bacteria are killed by the preliminary sterilization but the bodies are left, and this is sufficient to explain the "salt fever" in infants and the *Wasserfehler* after injection of salvarsan. His findings call for a revision of all the work on "alimentary fever" in infants, as he found that the rise in temperature followed constantly when the salt solution was made with distilled water which had stood for some time, while it was never observed when the water was freshly distilled. Consequently the statements as to the danger of subcutaneous infusion of salt solution in infants are shown to be unfounded if the water is free from bacterial contamination.